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### A SHORT HISTORY OF OPHTHALMIA DURING THE EGYPTIAN CAMPAIGNS OF 1798-1807*

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MUCH has been written about the ophthalmia which ravaged the European armies during the first half of the XIX century. The largest bibliography, although in no way complete, is to be found in Dr. J. Boldt's book on trachoma as an epidemic. He tried to trace the origin of this disease back to Egypt, and to clear up several of the problems concerning its wandering through the armies of Europe. He did not fully succeed, and it will not be possible to identify exactly the different forms of conjunctivitis described during the pre-bacteriological era. I myself began at the time of my first journey to Egypt, in 1899, to collect all the available material concerning the eye diseases which attacked the French, British and Turkish soldiers during their campaigns in Egypt. I tried, moreover, to compare the old reports with the actual condition of eye disease in Egypt, in order to come to a better understanding of the historical facts. One of the most pleasing results of my investigations was to establish the part played by British army surgeons in the discovery of the contagious nature of the ophthalmias with which they had to deal.

* A paper read by Mr. MacCallan before the Section of the History of Medicine, at the Royal Society of Medicine, on November 4, 1931.

In response to the invitation with which the Royal Society of Medicine has honoured me, I have great pleasure in recalling to your memory the important rôle played by British medical men in the progress of medical and ophthalmological knowledge.

## I.—Retrospect concerning Ophthalmia in Egypt before the French Expedition

Eye diseases have been recognized in Egypt since the early historical period of the Old Kingdom. The Ebers papyrus gives hundreds of recipes for different eye troubles, and clearly distinguishes, for example, leucoma of the cornea and trichiasis, both of them sequelae of severe acute or chronic forms of conjunctivitis. An oculist to the royal court of one of the kings of the VI dynasty (about 2,600 B.C.), is known to us from his tomb stele, recently discovered by Prof. Junker near the Giza pyramids. But from that date onward, we do not hear anything about the occurrence of eye diseases until the late Islamic period under the Mamluks in the XIV century A.D. At that time, the Egyptian oculist Sadaqa ash-Shâdilî wrote in his still unedited Arabic treatise on eye diseases, that "the inhabitants of Egypt are more frequently attacked by ophthalmia than other people on account of the abundance of dust and sand in their land." This theory of the origin of eye diseases in Egypt prevailed during the following centuries, and is still uttered in our own days by foreign travellers in that land.

The first serious European medical observer in Egypt was Prospero Alpino, physician to the Venetian Consul in Cairo from 1580 to 1584, who afterwards composed the famous book *De Medicina Aegyptiorum* (first edited at Venice 1591). He had observed, already at that date, the seasonal occurrence of ophthalmia in Cairo. "Sparsim vero per urbem toto anno hae oculorum inflammationes vagantur, atque epidemice plurime in prima aestatis parte calidissima. . . Eo enim anni tempore e centum hominibus quinquaginta saltem lippientes observantur. . ." He observed, moreover, pterygium, corneal ulcers and opacities, cataract, mydriasis (probably glaucoma) and hemeralopia. The standard of the medical profession was, however, very low, as anyone could buy a licence to practise on applying to the Turkish chief-physician (*Hekimbashy*).

Since Alpino's time, several hundreds of travellers have described their journey to Egypt, very few of whom fail to mention the prevalence of eye diseases and blindness. I mention only the Bohemian nobleman Harant of Poljic, because he gave, in the Czech language, a most original and intelligent description of what he saw. He was the first to describe the masses of flies on the

eyes of the natives, especially children, and he attributes very justly the prevalence of eye disease to this and to the general filthiness of the poor population. The French physician Tourtechot-Granger was, in 1745, the first to call Egypt "the land of the blind" ("l'Egypte peut à juste titre, être appelée le païs des aveugles"). In 1735, a section for blind students was founded in the Theological College of the Azhar Mosque; it had some 80 to 150 inmates and still exists in our days. Many prominent foreign travellers themselves became victims of ophthalmia; James Bruce and Eyles Irwin were attacked by light forms of this complaint, while the Greek dragoman of the former lost one eye by the same disease during their stay in the Nubian desert.

In general, we may assume that eye diseases, in particular trachoma, have been frequent in Egypt ever since Pharaonic times. The terrible increase of their frequency and of the resulting blindness is in all probability due to economic distress under the rule of Mamluks and Turks beginning in the second half of the Middle Ages. When Bonaparte undertook, at the end of the XVIII century, his adventurous expedition to Egypt, he found this rich land inhabited by two millions of peasants (Fellahîn) living in the most appalling misery, a prey to all kinds of infectious diseases.

## II.—Ophthalmia in the French Army

On July 1, 1798, the young general, Napoleon Bonaparte, landed near Alexandria with an army of about 40,000 men, occupied that town and proceeded to march on Cairo on July 9. During this forced march in the fiercest of the North African summer heat, the troops suffered the tortures of thirst, followed by delirium, dysentery and night blindness. After the so-called battle of the Pyramids (July 21) and the occupation of Cairo, it was immediately found necessary to organize a large military hospital at Giza (the south-western suburb opposite Cairo), to accommodate wounded, dysenteric and ophthalmic soldiers (Desgenettes I, p. 13). A general order from Berthier, *chef d'état-major*, on August 17 (Jonquière II, p. 478) called attention to the fact that the rise of the Nile made the nights cooler and moister, and warned the soldiers against sleeping without having the head well covered. The humidity of the nights was supposed to generate several diseases, and in particular, "inflammations of the eyes which, without being dangerous, are very troublesome and painful." This order seems to me an evident proof that the "ophthalmia" which attacked the French army was in the beginning harmless, and that it must have been mostly of the type of the very contagious but not dangerous conjunctivitis caused by the Koch-Weeks' bacillus; for this disease is prevalent everywhere in Egypt from April to

November. On the other hand it is manifest that the French army physicians were far from suspecting the contagious nature of the epidemic; they continued to be so during the Egyptian campaign as well as for a long time after it.

In spite of General Berthier's warnings the epidemic spread very rapidly. At the end of September the Chief Surgeon, Dr. Larrey, stated (p. 30) that few soldiers had escaped ophthalmia and that it had had fatal consequences in some of the cases. As he wrote expressly that it was of an acute inflammatory character there is no doubt that some of the cases were gonorrhoeal conjunctivitis, which is of frequent occurrence among the Egyptian population in autumn. Another military surgeon, Assalini, wrote about the same time from Cairo (p. 117) that the duration of the ophthalmia was from seven to eight days. "I have seen many recover in less time, and I have seen others continue to suffer under it for several months." This latter assertion tells us that some of the acute ophthalmias (by Koch-Weeks' bacillus ?) may have been followed by a superimposed trachoma.

In the provinces things were in no way better: General Reynier, in command of the Eastern Province (Sharqiya) of the Delta, sent a report, on September 29, 1798, saying that every one of his battalions had been reduced by ophthalmia from 350 to about 125 men. This is confirmed by the memoirs of Lieutenant Vertray and Sergeant François, who gave dramatic narratives from the small town of Bilbeis. There the number of combatants was so reduced that ophthalmic soldiers with eyes completely blinded by the swelling of the lids had to be employed to man the trenches, their muskets being pointed at the enemy by comrades whose sight had not been affected.

In Upper Egypt the ravages of ophthalmia were still worse. The brilliant General Desaix set out on August 25 with his division of 3,000 men in pursuit of the Mamluks southwards along the Nile. On October 7 he overtook Murâd Bey and defeated him at the entrance of the oasis of el-Fayyûm, but was unable to follow the beaten enemy on account of the ophthalmia which had rendered 1,400 men incapable of service, besides the other sick and wounded (Jonquière III, pp. 206 and 224). Desaix himself, his Brigadier-General Robin, and many other senior officers were themselves suffering and unable to leave their tents. On October 27 Desaix took refuge with his division in the town of Fayyûm itself. "We were," says Captain Savary, "more like a hospital being evacuated than troops on the march. . . . There were more blind men than there were healthy. Every soldier who was able to see or who had only one eye attacked served as guide to several blind comrades who had, however, to carry their arms and baggage." General Desaix still hardly restored to health, resumed the pursuit of the

Mamluks southwards, as far distant as Aswân in Nubia. He left the still suffering General Robin with 350 ophthalmic soldiers in a provisional hospital at Fayyûm. The unhappy men were attacked by several thousands of Egyptian peasants guided by Mamluks; the tragic scenes of Bilbeis were here repeated, the blind soldiers being obliged to mount on the terrace of the building, and to repel the assailants by "blindly" aimed musketry fire. Less fortunate were the ophthalmic soldiers in a temporary hospital at Mansoura; they were attacked at the end of 1798 and cruelly massacred by the population (Report by Lavalette), as were also the blind and sick with Desaix's baggage on Nile boats on March 9, 1799. Many blind or weak-sighted soldiers had to be sent back to Cairo where a special military ophthalmic hospital was inaugurated on the farm of the Mamluk leader, Ibrahim Bey, at Giza. It must have been situated practically on the site where there now exists the modern ophthalmic hospital organized in 1923 by MacCallan, and the Memorial Ophthalmic Laboratory founded with the help of the British War Graves' Fund.

In September, 1798, the young physician Bruant (who died later on from plague) published, at the request of the Chief Army Physician Desgenettes, a pamphlet on ophthalmia. He describes, however, only light cases almost entirely without corneal affections. He was quite unable to deliver a definite opinion, as he was manifestly baffled by a strange and unknown disease. I omit the many reports written by officers, officials, savants and artists of Bonaparte's army on their own experiences with ophthalmia. I collected carefully all these records, but did not get any other evidence from them than that they all suffered from light forms of ophthalmia, leaving no weakness of the sight and no chronic sequelae.

Far the best medical description of ophthalmia as it was observed at the end of 1798 is that furnished by the aforementioned Assalini (p. 124-5). I am giving only the gist of it: "On examining the eyes in this state, the vessels of the conjunctiva appeared red and distended; often the conjunctiva was elevated to such a degree that the transparent cornea appeared quite buried in it, and of very small diameter. Then the palpebrae became oedematous, the patient could no longer endure the light, the flow of tears increased, and generally became changed into a thick and sometimes yellow matter." Here, Assalini appends a note in which I find the remarkable sentence: "The inflammation of the conjunctiva in the ophthalmy of Egypt, and that of the membrane of the urethra afford discharges of which the appearance is exactly similar." When regressing from this stage he calls the ophthalmia ***simple***, although very severe; and ***complicated*** when it gives rise to corneal lesions, of which he mentions "specks, staphylomas, hypopions and

other diseases." "Among the causes, I consider the intense light of the sun as the principal." Later on (p. 128) he mentions, moreover, "the chalky, argillaceous and calcareous particles in the atmosphere" as causes, and also "suppression of the perspiration, cold air and damp" by night. "I observed that the sappers appointed to manage the flying bridge established on the Nile between Gizeh and the isle of Raoudah, were nearly all attacked with this disorder. . . ." On the other hand he found that the soldiers crossing the deserts of Upper Egypt or the Sinai Peninsula were free from ophthalmia. No idea of contagion came to his mind. He boasts (p. 135) that during his stay in Egypt "of 2,000 attacked with the ophthalmy, whom I attended, no one lost his sight, except the Abbé Elias, interpreter, a man of 60 years of age, and who at last contracted a speck which prevented him from seeing with the left eye."

It must be remarked that Assalini was very lucky; for, regarded from the point of view of to-day, the treatment which he applied was not an efficacious one: bleeding in the arm, foot, jugularies and temples, leeches, scarifications of the skin on foreheads and temples, blisters, setons, purgations and instillation of a solution of verdigris (suggested by the oculist Janin of Lyon, in 1772). Assalini adds, incidentally (p. 155), that he sent a powder composed of verdigris and acetate of lead to General Belliard in Upper Egypt who had been suffering severely from ophthalmia. This officer used to dissolve it himself in rose water when suffering a relapse. Assalini gives a very circumstantial report on eye diseases and blindness among the Egyptian population and records their remedies which were all in accordance with the old Greco-Arabic pharmacopoeia. He specially mentions the ***shishm*** (black seeds of ***Cassia absus L.***, a Sudan plant) which is to-day in use with the natives in Egypt.

Already on November 25, 1798, Bonaparte was obliged to despatch a first convoy of 150 amputated or blind soldiers—among the latter three army surgeons—to France (Larrey, p. 82). Their fate was terrible; obliged to land near Augusta in Sicily, they were all cruelly murdered by the mob, which was infuriated against the French. A second transport of 200 blind invalids was sent to France in February, 1799 (Correspondance de Napoléon Ier., T.v., Nos. 3912 and 3925); and reached its destination. According to Assalini (p. 144-5) several of these invalids recovered later on a good vision either by clearing up of corneal opacities or by Demours' operation (artificial pupil) and became able to do service in the Consular Guards. In Egypt, Larrey tried on blind eyes some operative interventions, but was not very lucky, a fact which Assalini ascribes to the climate. Several French grenadiers committed suicide in Egypt because they had lost their vision by ophthalmia (Larrey's second publication, p. 136).

During the winter, as ordinarily in Egypt, the ophthalmia subsided, and in the summer of 1799 it was less severe than before. Moreover, it was overshadowed by the dangers of the plague which decimated the French Army during the adventurous and unsuccessful campaign in Palestine and Syria. Desaix's division, however, in Upper Egypt, continued to suffer from ophthalmia, and after Bonaparte's return to France, his successor, General Kléber, had to send back another convoy of blind (end of 1799).

In 1800, the ophthalmia took a milder form. The army physician Savaresi published in this year a short pamphlet on ophthalmia which was printed in Cairo and re-published later on. It has been frequently quoted, but is a rather poor compilation. He ascribes the ophthalmia to the chalky and argillaceous composition of the Egyptian soil, and distinguishes, not very happily, inflammation of the globe, the tarsi and the conjunctiva. As local remedies he recommends vinegar water and a dry collyrium composed of sugar, sulphate of aluminium and nitrate of potassium.

In the spring of 1801, during the siege of Alexandria by the British army, ophthalmia broke out anew among the French garrison of this town. In a short time 3000 soldiers were attacked, but as, according to Larrey (pp. 31-33), none of them lost his eyesight, it must have been the harmless Koch-Weeks' conjunctivitis. Here again, the idea of contagion never entered the mind of Larrey or of army physicians. The German, Dr. Ludwig Frank for example, who did voluntary service in the French army, fully shared Larrey's views.

The French garrison of Cairo suffered equally from ophthalmia. On June 27, 1801, Desgenettes (I, p. 225) wrote that of 633 diseased soldiers (out of a total of 8,000) over 300 were suffering from ophthalmia. When they surrendered (July 7, 1801) they had, according to Wilson (pp. 173 and 253), besides this number, 500 other invalids, partly blind. On September 1 the capitulation of Alexandria followed, when 1,400 sick and 240 invalid French soldiers had to be sent to France on 16 British hospital ships. Of Bonaparte's original army only 13,000 men were left, that is to say, less than one-third.

During the long passage by Italy to France most of the ophthalmic sufferers recovered under the influence of the fresh Mediterranean breeze, while several others suddenly lost their vision after their arrival in France, in Larrey's (p. 33) opinion, from the sudden change of climate. I suppose that these were cases of acute secondary glaucoma following adherent leucomata.

Many other French army surgeons wrote, years after the Egyptian expedition, on their experiences with ophthalmia. Amongst these were Ceresole, Deruez, Renoult, Vautier, Lattil, Pugnet, Lassus et Desessartz. But their writings do not furnish new points of view

nor did any of them recognise the contagious nature of the disease. Nor was the Belgian physician Decondé able to profit from their publications when he wrote, in 1840, his history of ophthalmia in the French armies. The most important remarks which I found are contained in a study by R. Chamseru, who was not himself in Egypt, but took abundant information from the medical officers of the expeditionary forces, and examined in 1802 in Paris, a great number of ophthalmic soldiers who had just come back from Egypt.

He bases his description of the "Egyptian" ophthalmia largely on the data furnished to him by Renoult, chief surgeon of Desaix's army in Upper Egypt. This latter observed the seasonal occurrence of the acute form of ophthalmia, as well as its increase during the blowing of hot south winds (so-called *khamsin* winds). He found, moreover, the attacks of the disease more frequent during the sojourn of the troops in damp cultivated land than in the desert. As to the causes Renoult and Chamseru share the opinions of their predecessors and do not take into consideration contagion. Among the sequelae of severe ophthalmia Renoult mentions the hypertrophic ectropion of the lids. We know to-day that this is a consequence of insufficiently treated gonococcic conjunctivitis.

Examining the invalids of the Egyptian army who were specially sent to Paris, Chamseru found a certain number of shrunken globes resulting from total melting of the cornea, and several men blind by "gutta serena or glaucoma" (probably secondary to adherent leucomata). He observed, moreover, "varices" of the conjunctiva (chronic congestion) and "fungus" (probably trachoma), moreover, pterygium and corneal opacities of different size. He recommends excision and scraping for the first-named diseases and "artificial pupil," after Demours, for the leucomata. At the end of his report he makes suggestions for improving sanitary and economic conditions in Egypt, particularly by creating and maintaining more canals and by extending the culture of various crops.

Among the great many other publications which followed the Egyptian expedition I will mention only that of Ph.-J. Roux, a celebrated surgeon of Paris who went to London, in 1814, in order to study British surgery. He visited the Military Asylum of Chelsea under the guidance of Sir Patrick MacGregor (see below) and saw there a great number of ophthalmic children. On this occasion he mentions that several of the French invalids, returned from Egypt, suffered for years from chronic eye-trouble; but that contagion had not been observed, either in the regiments which received the details of the Egyptian divisions or in military asylums or in the civil population. It is, indeed, an uncontested fact that the French army during the decennium following the Egyptian expedition suffered less from ophthalmia than all the other armies of Europe. It is this which confirmed the French medical men in

their stubborn resistance to the adoption of the doctrine of the contagiousness of ophthalmia. Roux himself was severely rebuked by Larrey (*Clinique chirurgicale*, Vol. I, Paris, 1829, p. 451), because he had been inclined to adopt the English opinion that ophthalmia was transmissible.

There are practically no records of eye diseases in the French army during and after the Napoleonic wars, with the exception of the Russian campaign of 1812, where the Belgian army-surgeon van Kerckhove observed (but mentions cursorily only) a severe ophthalmia (the same probably which spread, from 1813 onwards, in the Prussian army). Generally speaking, the standard of ophthalmological science was rather low during this period, particularly in France, because the surgeons and medical faculties were violently opposed to the recognition of this speciality as a separate branch of medicine. The above-mentioned surgeon, Professor Roux, *e.g.*, speaks in his book (p. 280) of "le funeste préjugé des gens du monde en faveur des oculistes!" The name of oculist had, indeed, acquired in France a bad reputation through a series of wandering quacks and cataract couchers who had profited from the decline of ophthalmological education during the great revolution, and the following incessant wars. This is one of the chief reasons why French army physicians failed to discover the contagious nature of ophthalmia, and why they had to leave this honour to the British.

### III.—Ophthalmia in the Turkish Army

The Turks undertook three campaigns against the French forces in Egypt: in 1799, when they were defeated by Bonaparte at Aboukir, in 1800, when they were beaten by Kléber near Cairo (Héliopolis), and in 1801, in co-operation with the British forces. About the first two campaigns no medical reports exist, while al-Gabarti, the Arabic historian, does not say anything about the health of the Turkish army. The third expedition which started at the end of 1800 from Syria, under the command of the Grand Vizier, was accompanied by a British military mission. The surgeon to this mission was Dr. William Wittman, who published a very interesting account of his experiences with the Turkish army, accompanied by his medical journal. As to ophthalmia, it began immediately the Turks, after having crossed the Sinai Peninsula, reached the first Egyptian town, Bilbeis, on May 14, 1801. By June all kinds of diseases were multiplying in the Turkish and British armies which were besieging Cairo; the soldiers "were attacked by fever, dysentery, diarrhoea and ophthalmy." During the winter 1801-2 the ophthalmia ceased, but plague appeared. In his special paragraph "On Ophthalmia," Wittman sums up that "in the months of May, June, July, and part of August, 1801, ophthalmia raged among the

English and Ottoman armies in Egypt." He describes it as an acute purulent conjunctivitis with severe swelling of the lids; among the soldiers of the British mission he did not have to complain of any loss of eye-sight. "The apparent causes of the disease are the application of heat and light; irritation from particles of sand or dust; and the occasional exposure to night air" (p. 541). "Some circumstances have recently occurred among the troops on their return to England from Egypt, which have given rise to an opinion that the disease is infectious" (p. 542). Wittman does not share this opinion, but relates that the women and children of the British mission were attacked with ophthalmia during a short sojourn at Larnaca, in Cyprus, where this disease was prevalent. Wittman's therapy was fairly reasonable: a vinegar-water lotion with acetate of lead instilled, sometimes blisters and leeches against pain and congestion. He had some difficulties in treating the distrustful Turks, although the vizier himself when suffering from ophthalmia in his only eye did appeal to the English doctor's art. On the further development of ophthalmia in the Turkish army no reports are in existence.

## IV.—Ophthalmia in the British Army and Navy

### A.—The Campaign of 1801

From July, 1798, to September, 1801, the Egyptian coast was blockaded by the British navy. But as no landing operation was possible before March, 1801, we do not learn anything about "Egyptian" infections among the English sailors. On March 8, 1801, General Sir Ralph Abercromby landed at Abukir (Abû Qîr, the place where Nelson had destroyed Bonaparte's fleet on August 1, 1798) with an army of 17,500 men and took the French fort. On March 21, 1801, he attacked and defeated the French army (then under General Menou) near the site of the ancient Canopus. After this battle Menou was besieged in Alexandria, but did not surrender until September 2, 1801. We have already seen in Chapter II that the blockaded French troops suffered very much from a harmless ophthalmia during the siege. As to the British fleet we have the evidence of Dr. Douglas Whyte, Navy-surgeon, in a letter written in the Bay of Abukir, on July 8, 1801. He observed a rapid increase of ophthalmia among the British sailors, and held sun-glare, dust of the desert and humidity responsible for the disease and denied contagion. He held the same opinion concerning plague, inoculated himself twice with the pus of plague abscesses and died, after a third experiment, on January 9, 1802, "a victim to his own visionary speculations." (Power, p. 9).

A little later, by September, 1801, ophthalmia had already appeared

on board the ships. Dr. Brigges, surgeon of the man-of-war *Ajax*, wrote a letter, on February 12, 1802, to Trotter, editor of *Medicina Nautica*. In this letter Brigges emitted with emphasis the opinion that the "Egyptian" ophthalmia was of contagious matter. The priority in forming this opinion was no doubt his; the literary priority, however, belongs to Edmondston and Power, as Brigges's communication was published in 1804 only by Trotter, who added moreover some disapproving remarks.

The first to publish his experiences with Egyptian ophthalmia was Edmondston, in 1802. As he had not been himself in Egypt I prefer to give first the reports of the surgeons and officers who accompanied the British expeditionary forces.

George Power was assistant surgeon to the Royal Welsh Fusiliers. He observed ophthalmia first at Rosetta on the seashore, and then in the interior of Egypt after the capitulation of Cairo in July, 1801, when he was in charge of the Giza Hospital where all the ophthalmic French and British soldiers were collected, nearly 800 in all. Here Power himself and his assistant, Dr. Davis of the 26th Dragoons, were simultaneously attacked by the disease, as well as the surgeon of the 89th regiment of foot which was stationed in Cairo. This surgeon was probably Reid, who himself wrote, in 1806, a pamphlet on his observations. Power describes a purulent conjunctivitis which must have been partly gonococcic, as he enumerates among the sequelae chemosis, specks and "redness" (vascularisation) of the cornea. His therapy was more reasonable than that of the French surgeons: removal of the "acrid" matter, by washing the eye with a syringe, lotion of lead sugar and opium, and blisters or bleeding.

As to the causes of ophthalmia he admits those supposed by his predecessors, but adds as the most important a ***putrid virus*** rising from "foul and pestilent vapours" out from the filth and rubbish of oriental towns and villages. To this putrid virus he ascribes the origin of plague, dysentry and "eruptive fevers;" as he considers these fevers infectious, he thinks that ***ophthalmia may likewise be contagious***, not always, but in certain instances. He adds (p. 27) an interesting note on a former occurrence of ophthalmia in Great Britain: "A species of ophthalmy prevailed in these kingdoms about the year 1790, which was thought to be contagious; and a species of it is frequently prevalent amongst the Irish peasantry, which is considered by them to be infectious."

His first observation, however, does not seem to us conclusive: Mrs. Rosetti, wife of the Austrian Consul in Cairo, caught the ophthalmia from a diseased gentlemen who was sitting opposite her at table! Much more important is his remark that several sailors on troop ships apparently caught ophthalmia from suffering soldiers on their passage home from Egypt. Among the Hompesch

Hussars which were encamped near Abukir "one tent only in the line . . . had been particularly remarkable for infecting the men with ophthalmia." Power then mentions apparently from reports of his colleagues, the infection with ophthalmia of two regiments at Gibraltar which had never been in Egypt, but acquired the disease from their intercourse with sailors and soldiers returning from Egypt.

Lieut.-Col. R. Th. Wilson wrote in 1802 the best report on the British expedition to Egypt. He includes (pp. 247-9) a short paragraph on ophthalmia in which he repeats in general the ideas of the French surgeons. But he adds that ophthalmia is partly due to "the barbarous inattention of parents" to their children which "have from earliest infancy at the corner of their eyes a great quantity of little insects continually settled. . . ." He mentions that the British troops "during their short stay, have suffered considerably, one hundred and sixty being totally blind, and two hundred having lost one eye irrecoverably." These figures are extracted from the accompanying report (pp. 253-4) by Sir Thomas Young, Inspector-General of the army's sanitary service. In the 4th edition of his book (1803, Vol. II, p. 123 note) Wilson includes a remark on the recent discovery of the contagious nature of ophthalmia.

Major Walsh in his journal of the campaign confirms Wilson. He mentions that the division of General Coote was the worst sufferer from ophthalmia. He does not speak of contagion.

Henry Reid*, surgeon of the 89th regiment, and Dr. Dewar wrote about their experiences with ophthalmia several years after the expedition, the latter declaring himself an adherent of the doctrine of contagion; their pamphlets were, however, not at my disposal.

The best and most complete report on ophthalmia during the campaign of 1801 was produced by James MacGrigor†, superintendent surgeon to the Indian expeditionary force. This army was sent from India (Bombay) to Kosseir (Qusayr), on the coast of the Red Sea, where it landed on June 15; after a fatiguing march through the Eastern Desert and Upper Egypt in full summer heat, it reached Cairo in August, where, in the meantime, the French garrison had capitulated.

The Comte de Noé, a French emigrant who served as a lieutenant in the 10th English regiment, has described and illustrated this expedition. He mentions the occurrence of ophthalmia among the troops several times and declares that he himself was the only officer who was not attacked, owing to his regular use of an eyewash and

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* In Johnston's *Roll of Army Medical Service*, his name is spelt Reed.

† He is frequently confused with Sir Patrick MacGregor, who will be mentioned below.

dark spectacles. This is contrary to the statement (*vide infra*) of MacGrigor that officers were rarely victims of ophthalmia; de Noé was writing 25 years after the expedition.

MacGrigor states that the Indian division was composed of 8,000 men, half of whom were British soldiers. Ophthalmia began in July, 1801, during the march through the desert and reached a climax during the sojourn in Cairo (August), and the following march to Rosetta on the sea-shore (September). In this latter town the division had 600 ophthalmic patients, 350 of them from the 10th and 88th English regiments alone. In October, a second climax was reached with over 1,000 ophthalmic patients. In November and December, 1801, the number decreased, there being 90 cases at the end of the year. On April 1, 1802, 50 blind British soldiers had to be invalided out of the Indian corps and sent to England. The remainder of the division marched in May, 1802, from Alexandria to Suez. During this march ophthalmia again began its havoc among the troops, but ceased during the following sea passage to India. It was remarkable that during the whole time the native Indian troops suffered less from ophthalmia than the English soldiers. The total of British soldiers invalided out of this division was 117 out of 3,759 men, and that of Indians, 41 out of 4,127.

MacGrigor's description of the disease corresponds to that of an acute purulent conjunctivitis, followed often by total loss of the eye or by corneal specks, ectropion, and sometimes a chronic state of inflammation, lasting several months. We find in MacGrigor's record some very judicious remarks: "Several gentlemen thought that this disease, in Egypt, was contagious. So singular an opinion I would hesitate to offer on slender grounds. However, the remarkable prevalence of the disease in particular companies of regiments, while the same general causes prevailed everywhere, will not be easily accounted for, without admitting something of the kind" (p. 149). A little later he adds: "I believe that several diseases are contagious which are not suspected to arise from such a cause: the theory of contagion is but very imperfectly understood." It is very rare indeed to meet at that time a similarly sound discrimination.

At the end of his book MacGrigor inserts another important remark (p. 157): "It could not escape observation how rarely officers were the subjects of this disease . . . . I lay most stress on the attention which officers pay to cleanliness. In the 88th regiment where, I believe, forty men did not escape an attack, only two officers out of thirty had ophthalmia." He says, moreover (p. 158) that only one officer lost an eye, ensign Paton, a former medical student who devoted himself to the attendance of ophthalmic soldiers and contracted the disease in its severest form. Surgeon Bellars was attacked by the same form of ophthalmia during his

service in the Giza Hospital and suffered during several months, but escaped corneal camplications.

As therapeutics MacGrigor advocates, in the beginning of the ophthalmia, syringeing with tepid filtered water, afterwards application of sugar of lead with camphor, "vitriolated zinc" with, in case of severe pain, the addition of opium. A new feature is the treatment of leucomata by splitting of the corneal vessels leading to them, eventually followed by application of the old *aqua phagedaenica* (a composition of sublimate and lime water). He praises the efficaciousness of the preventive measures taken by the unfortunate Dr. Douglas Whyte to protect the eyes of sailors: frequent washing of the eyes with cold water and wearing of an eye-screen.

As to the spreading of ophthalmia from the troops serving in Egypt to other places and in particular to Great Britain the two pamphlets by Arthur Edmondston*, a young Scottish surgeon to the second regiment of Argyleshire Fencibles (Territorials), are the most important contemporary documents. In his first publication, as early as 1802, *he insists energetically on the contagiousness of the disease*, and so the priority in this important discovery is his.

It is to be noted, however, that Edmondston, like Power, was not able to free himself entirely from the time-honoured prejudice of ancient Greek medicine that ophthalmia could be acquired by the mere looking at a diseased person: "I am inclined to believe" he says (p. 46), "that the influence of this contagion operating through the medium of the atmosphere, does not in ordinary circumstances exceed the space of a foot. As the discharge of morbific matter, however, from the eyes, in cases of virulent ophthalmia, is continual and abundant, an ample source of infection is constantly present. . . ."

Edmondston observed that his regiment was free from ophthalmia during its stay at Gibraltar where it had no intercourse with troops returning from Egypt. On January 9, 1802, it embarked on the transport *Delft* which was considered "an unhealthy ship." She had brought the regiment of Guards from Egypt to Gibraltar, and they had suffered a great deal from fever and ophthalmia during the passage. In spite of the fact that the *Delft* had undergone a two months' washing and frequent fumigations during its stay at Gibraltar the Argyleshire men had during the passage to Spithead and quarantine there, nine cases of ophthalmia; in the month of March during the marches to Hilsea and Colchester 25 cases; in Colchester Barracks from March 23 to April 11, 75 cases; and later on 24 cases. Edmondston himself contracted the disease while officers in general were spared. "I impressed early upon

* His name is nearly always misspelt in later publications (Edmonson, Edmonstone, etc.). He was born in 1780.

their minds an idea of its infectious nature, and they carefully guarded against any intercourse that might have produced it." Edmondston observed that men sleeping in the same bed or even in the same room with ophthalmic patients often got the infection within 24 hours. Some of the Argyleshire men having enlisted, later on, in the 49th regiment, carried the infection to the latter.

Edmondston, moreover, collected information from those of his colleagues who had remained at Gibraltar after his departure. Dr. Robinson, surgeon to the Banffshire Fencibles, wrote to him that his regiment caught the contagion from the 8th regiment, coming from Egypt; and Dr. Ives, surgeon to the Cambrian Fencibles, informed him that the ***ophthalmia Gibraltariensis*** appeared among his men during their passage to England. He had seen blind patients arriving from Egypt, and he concludes: "I very much suspect some infection in the case." Edmondston heard later on that the Prince of Wales's Fencibles were equally affected during their stay at Gibraltar and afterwards. From the end of 1801, regiments from Egypt were subsequently sent to Gibraltar where ophthalmia "broke out anew and with increased severity. Many who had escaped it entirely in Egypt were now affected, and the garrison surgeon, Mr. Pym, an accurate and intelligent practitioner, and who had also become a contagionist, informed me that the men of the Argyleshire, Banffshire, and others who had enlisted into the Egyptian regiments, had suffered in a peculiarly violent degree." Two battalions of the 5th regiment which had not been in Egypt were likewise infected and had several cases of blindness, as the form of the ophthalmia was severe, closely resembling the "Egyptian."

The civil population of Gibraltar and, later, that of Malta was infected in a similar manner. In the latter island "the inferior class of courtezans" was the first to contract the disease. After the peace, in May 1802, when many regiments were disbanded in England, the soldiers carried the infection with them to the civil population, the lower classes of which did not at that time have much notion of cleanliness. ". . . . the disease was considered as local and uninfectious. Owing to these circumstances, ophthalmia appeared at the same time in the most distant parts of Great Britain, and that peculiar modification of it, denominated Egyptian ophthalmia is now (in 1806!) familiar to almost every medical practitioner . . . ." Edmondston mentions (p. 115) that trichiasis is rarely a primary affection, but a consequence of previous inflammation.

Edmondston who was, without a doubt, a keen observer, notwithstanding that he was only 23 years of age, relates that he found, in 1803, in Paris, and its suburbs a mild form of ophthalmia, lasting 24 hours only, but very contagious and joined with a kind of

influenza. This is the extent of Edmondston's own experiences with ophthalmia. The main part of his book is filled with an historical sketch and quotations of former authors on ophthalmia. Thus we find that, in 1806, "Egyptian" ophthalmia was already a wide-spread disease in Great Britain. It is not possible, within the limits of this paper, to record the very many publications by British surgeons and oculists, from that year onward, on the further development of the disease in the United Kingdom. I will mention, however, on account of their importance, the two published by the Scottish army surgeon John Vetch. In 1807, he reported on the ravages of ophthalmia in the 52nd regiment of foot. This was one of those which had suffered severely in Egypt, being subsequently brought up to strength by recruiting in England and stationed in barracks near the town of Hythe in Kent. The second battalion alone had, from August, 1805, to August, 1806, out of 700 men 636 ophthalmic patients under hospital treatment; 50 of them lost both eyes, 40 one eye. Inspector-General Knight was a fervent advocate of phlebotomy which was still for many years to dominate the therapy of ophthalmia. Vetch, however, has the credit of urging the application of nitrate of silver: "Lunar caustic, as far as my observation goes, seems to be the most efficacious application."

He describes, moreover, the conjunctival granule as a specific tissue change resembling the villi of the small intestine, and *he gives typical pictures of granulations.*

In his second book, published in 1820, he inserts in the second section a complete history of ophthalmia in the British armies. He admits transmission by the purulent discharge containing an "animal virus," from conjunctiva to conjunctiva, and he insists on the dangers of common use of towels and hand-basins by the soldiers. Of importance is, moreover, his recommendation of copper-sulphate-stone for granulations. Vetch inoculated successfully ophthalmic pus on the urethra and so he is a forerunner of Pieringer who proved, 20 years later, by experiments, the identity of the severe form of ophthalmia and gonorrhoeal conjunctivitis.

Of all the others, more than twenty English publications on ophthalmia between 1806 and 1820 I quote here only the two papers read at the Society for the Improvement of Medical and Chirurgical knowledge by Sir Patrick MacGregor, surgeon to the Royal Military Asylum. In this educational institution ophthalmia began in April, 1804, probably introduced by the visits of soldiers returning from Egypt who came to see their children; by the end of that year, 392 children, 105 of them girls, had been attacked. Ulcers of the cornea, specks, and sometimes loss of the eye by melting of the cornea were the consequence. In the summer of 1809, a second epidemic broke out. In general, the sequelae for children were less severe than for adults; of all the thousands of

children who suffered from ophthalmia between 1804 and 1810 six only lost both eyes, twelve one eye. Sir Patrick gives (pp. 51-54) a narrative of the ophthalmia developed by three nurses who had received some discharge of diseased eyes in the face while they were syringeing sick children. The ophthalmia broke out in each case within 24 hours, and one of the three ladies lost the right eye within 4 days from the infection, by an abscess of the cornea. MacGregor says about this form of ophthalmia: "The disorder appears to be communicated by the purulent matter of a diseased eye being applied to that of a sound person. It so much resembles the venereal gonorrhoea in its manner of being communicated, and its symptoms . . . . that some well-informed medical men have entertained the idea of their being the same disorder. But till the identity can be proved by a series of well-conducted experiments, such an opinion ought to be received with caution (p. 51)." "The contagion was, as formerly, more active in warm than in cold weather. Flies, in warm weather are seen in great numbers surrounding patients labouring under ophthalmia; and, I much suspect, are very frequently the medium by which the disease is communicated (p. 54)." It is to be mentioned that Ware, in 1808, equally insisted upon the likeness between the "Egyptian" and gonorrhoeal ophthalmia.

Patrick MacGregor proved himself to be a judicious observer not only here but also in his description of the granulations which he observed in March, 1802, on the conjunctivae of fifty-six ophthalmic sufferers of the Coldstream Guards, just returned from Egypt. "In all of them the eye-lids were more or less affected; and when the inner surface of the eye-lids was examined with a magnifying glass, the small sebaceous glands situated there were found increased in size, and of a redder colour than natural (p. 38 note)." Although this description of the conjunctival papillae is an incomplete one, it is, as far as I know, the first description of granulations met with after the outbreak of the epidemic, and therefore of importance.

### B.—The Campaign of 1807

The official documents on this short and unlucky expedition are still not available in print. There exist indeed some private narratives (Butt, Yeates and an anonymous one with the title "Disasters"), but no medical report. I rely chiefly on the narrative of the French Consul F. Mengin, who was an eye-witness of the events, and on the modern study of Sh. Ghorbal, largely based on hitherto unpublished material in the Foreign Office.

The political situation in the Near East having entirely changed, it was now the turn of Great Britain to try to conquer Egypt from the Turks. Unfortunately the enterprise was undertaken

with wholly insufficient forces: on March 14, 1807, General Fraser landed at Alexandria with 5,000 men, occupied that town without resistance and sent a force of 1,400 men to occupy Rosetta. This detachment failed to take precautions and was suddenly attacked by Albanian troops serving under the orders of Mohammed Aly Pasha, Turkish governor of Egypt and founder of the present Egyptian reigning dynasty. The British detachment lost half of its effectives, 120 prisoners being sent to Cairo. In April, a force of 2,500 men was sent against Rosetta, but was defeated by the Turks and Albanians near the village of el-Hamâd. This time 800 British prisoners were sent to Cairo, many of them severely wounded. They were all thrown pell-mell into native boats together with the cut-off heads of their 450 dead comrades who were destined to be put on spikes to form a horrible alley in the middle of the Ezbekiya square in Cairo. These unlucky soldiers arrived at their destination, the Citadel of Cairo, in a pitiable condition, most of them suffering from acute ophthalmia. The Pasha, however, immediately ordered that the prisoners should be well treated; the French consul was allowed to have them attended by his surgeons, while the European colony of Cairo got permission to provide them with garments and food. The well-known Austro-Italian practitioner Dr. Morpurgo, established a hospital for the prisoners in the Old Serail of the Citadel (according to Seetzen, Vol. III, p. 205). It seems that by September, when a convention was concluded between General Fraser and Mohammed Aly Pasha, most of the ophthalmic prisoners had been cured. They were sent back to Alexandria, from which harbour, on September 23, 1807, the British expeditionary force set sail for Sicily whence it had come.

We do not know whether these troops carried the infection to British garrisons in Sicily. But we learn from a publication by Dr. Farrell (in 1811), that the British troops in that island had been infected with ophthalmia since 1806, when a part of the severely infected garrison of Malta had been transferred to Sicily. In general, the ophthalmia prevailing in Sicily seems to have been mild in character. It lasted until 1811 when it began to diminish little by little.

It is well known that ophthalmia continued its ravages in the British army for about ten years more. In 1818 the number of blind men invalided out of the army was over 5,000, and the Government was forced to make an annual grant of £100,000 for pensions. Italian troops were infected, in 1801, at Elba and Leghorn by French troops, later on in Sicily by British. The epidemic lasted until 1826; meanwhile the Italians had carried the contagion to the Hungarian (1809) and Austrian (1814) armies. The epidemic in the Prussian army, from 1813 on, was one of the severest ever seen. Thence it passed to the Swedish troops in 1814.

In the Russian army it appeared in 1818 only, in the Dutch in 1815, in the Belgian in 1825, in the Danish in 1848, and in the Portuguese army from 1849. For the occurrence of ophthalmia in the British army and colonies I would refer you to Treacher Collins's excellent *Introductory Chapter* to Boldt's work.

## V.—Concluding Remarks

We have seen that the descriptions of "Egyptian" ophthalmia given by the army-surgeons of the period are in general vague; except in the case of the acute purulent form which is to be identified with gonorrhoeal conjunctivitis. The description of the chronic sequelae of the disease is insufficient, and without Vetch's pictures of granulations it would not have been possible to decide whether or not a trachomatous element was blended with the other forms of conjunctivitis. There is nowhere a good description of pannus and only once mention of trichiasis as a consequence of long standing ophthalmia. In general, the different forms of conjunctivitis were still not clearly distinguished in the first three decennia of the XIX century; I would remind you that such striking forms of disease as the pseudo-membranous (croupous) and diphtherial conjunctivitis were not "discovered" until about 1821 (by Béclard). Moreover, all the above-mentioned medical men were army officers, none of them trained ophthalmic surgeons. Ophthalmological education, as mentioned before, was in the hands of general surgeons, many of whom, particularly in France, very much neglected this special branch of surgery. Victor Stoeber, himself later on an excellent professor of ophthalmology, mentions incidentally that at the time when he was a student in Paris, from about 1810 to 1815, only *three lectures a year* were given by the professor of surgery on diseases of the eyes! It is only after 1820 that more accurate descriptions of *ophthalmia militaris seu Aegyptiaca* are to be found in the literature of the subject and that we are able to state with confidence that genuine trachoma was frequently a sequela of this form of conjunctivitis.

It is chiefly by the light of our present-day knowledge of the condition of conjunctival infections in Egypt that we are able to make a retrospective diagnosis of the eye-diseases raging in the French and British armies 130 years ago. In the summer of 1883, Robert Koch found, at Alexandria, in acute cases of conjunctivitis, Neisser's gonococcus and the small bacillus now called after Koch and Weeks. In 1901, Morax discovered the periodicity of the different kinds of conjunctivitis and their blending with trachoma which he found to be, in Egypt, a disease of early childhood. From 1903 to 1911, I was able to prove, by a long series of bacteriological examinations, that the gonococci and Koch-Weeks' bacilli may

persist during many months in the conjunctiva of patients, particularly in trachomatous cases and during the hot season. I was also able to show that gonorrhoeal conjunctivitis is spread in hot climates by extra-genital means. In 1913, MacCallan recapitulated, in a conclusive study, his long experience with trachoma and the various forms which it assumes in Egypt.

Consequently, we are now able to compare the imperfect descriptions given by the military surgeons of about 1800 with the clinical forms of conjunctival affections as observed in Egypt to-day, and to complete Treacher Collins's short, but very judicious remarks on the same question (see Boldt, Introductions, p. 13, foll.). The forms of "Egyptian ophthalmia" described by our predecessors of a century ago, correspond to the following forms of conjunctivitis as observed in Egypt:

(*a*) ***Acute catarrhal conjunctivitis*** caused by the Koch-Weeks' bacillus; it may become purulent, and even pseudo-membranous with severe swelling and pain. It may also become chronic, but it is hardly ever followed by dangerous ulceration of the cornea.

(*b*) ***Acute purulent conjunctivitis*** caused by the gonococcus, sometimes blended with strepto- or pneumococcus; the conjunctiva may be covered by a fibrinous membrane; in such cases the cornea is in the greatest danger. A large percentage of these ophthalmias terminate in partial or total destruction of the cornea and sometimes of the entire globe. Leucomata, adherent or not, and secondary glaucoma may follow.

(*c*) After a gonorrhoeal conjunctivitis the conjunctiva may persist in a state of papillary hypertrophy, sometimes leading to ectropion of the lids. It is advisable to call this affection ***meta-*** or ***post-gonorrhoeal conjunctivitis.*** It requires treatment with strong solutions of nitrate of silver; in the severest cases of ectropion, excision of a large strip of the hypertrophic conjunctiva is necessary. This form is easily confused with trachoma.

(*d*) ***Genuine trachoma*** in its various clinical forms; for practical purposes these are divided by MacCallan into four stages with their sub-divisions. It is frequently a complication or a sequela of the three first-mentioned forms of acute conjunctivitis, existing either as a primary disease or developing slowly after the healing of the acute ophthalmia. Many old and several modern ophthalmic surgeons have been, for this reason, inclined to consider trachoma merely as a chronic stage of gonorrhoeal or Koch-Weeks' conjunctivitis. This is, however, not admissible, because trachoma can develop quite alone, without a foregoing acute conjunctivitis, as is the rule in Northern countries. This form of trachoma, according to my own observations made in Poland and Silesia, is much less contagious than trachoma when blended with acute forms of conjunctivitis. A quite elementary degree of cleanliness is sufficient

to prevent the spread of trachoma in families where one or two members have been attacked. In Egypt, on the contrary, I have seen cases where the various members of a European or Asiatic family have mutually infected one another; where, for example, a trachomatous mother got an acute Koch-Weeks' conjunctivitis from one of the children, and transmitted afterwards her trachoma to all the other members of the family. Here I observed that several members had an acute catarrhal conjunctivitis followed by chronic secretion with formation of follicles, and later on by pannus and other sequelae of genuine trachoma.

It is in the same manner that we must explain the descriptions given of the various forms of "Egyptian" or "military" ophthalmia, 130 years ago. A rapidly spreading acute ophthalmia in the French garrison of Alexandria without the loss of a single eye cannot well have been anything but a Koch-Weeks' conjunctivitis. This is in Egypt seasonal, making its appearance in April, precisely the period in which it began to rage in the besieged city. On the contrary, an ophthalmia like that described by Vetch in the second battalion of the 52nd regiment, causing 636 cases with the loss of 140 eyes, cannot have been anything but a conjunctivitis of largely gonorrhoeal form. In many cases a hypertrophic post-gonorrhoeal condition of the conjunctiva, or trachoma, may have allowed the microbes to persist in the mucous membrane of the eyes and so cause a fresh outbreak elsewhere.

We must not forget that the importance of bodily cleanliness was very little appreciated a century ago, and that the spread of personal hygiene is a triumph of the last fifty or sixty years only. The difference in the incidence of contagion amongst officers and men had been observed already in 1801, by James MacGrigor. What a striking difference there is between the period 1801-2 when British troops, occupying Egypt for a year only, were very severely infected with the eye diseases common in that land, and the present time when, in an occupation lasting more than 50 years, only very rare and isolated cases have come to the observation of the medical staff. It it still more noteworthy that during the Great War, when hundreds of thousands of British and Colonial soldiers passed through Egypt, no serious outbreak of infectious conjunctivitis occurred. This in spite of the fact that these diseases were, until 1905, as wide-spread in the Egyptian population as they were in 1800; for it is only in the last twenty years that a marked decrease in the frequency and severity of contagious eye diseases is to be noted. This improvement is due partly to the increased wealth of the whole Egyptian population, partly to better hygienic conditions amongst the middle and higher classes, and in a high measure to the effective and progressive organization of ophthalmic hospitals created by MacCallan and now continued by his Egyptian pupils.

My conclusions are the following :

1. The ophthalmias affecting the French, Turkish and British armies in Egypt during the campaigns from 1798 to 1802 and in 1807 were—as far as the rather vague descriptions left by military surgeons allow them to be identified—the same as those which are still prevalent in Egypt. That is, a combination of Koch-Weeks', gonorrhoeal and post-gonorrhoeal conjunctivitis with trachoma. The high percentage of blindness was due to gonococcic infections (which are transmitted, in hot climates, by extragenital means).

2. The contagious nature of the disease, not admitted by French surgeons, was discovered by several young surgeons of the British Army and Navy (Edmondston, Power, Brigges, Reid and Dewar) and established by judicious observations.

3. The improved conditions which have prevailed in the British Army of Occupation in Egypt with regard to ophthalmia, throughout a stay of over half a century, are due to the personal cleanliness of the troops and the high standard of their education in hygiene.

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*Abbreviation:* R.S.M.—Library of Royal Society of Medicine.

# THE TREATMENT OF LIMBAL TUMOURS WITH RADIUM

BY

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THERE appears to be some doubt among ophthalmic surgeons regarding the effect of radium upon tumours of the limbus. The following cases may therefore be of some interest.

*Mrs. A. C.*—In this case there was a sessile tumour measuring about five millimetres in circumference at the limbus. There was a pedunculated portion about as large as the parent growth. The surface of the tumour was nodular, and the surrounding conjunctiva showed numerous enlarged vessels. Examination with the slit-lamp and corneal microscope showed that there were sprays of growth spreading into the superficial part of the clear cornea, and in places reaching as far as the level of the margin of the pupil. Gallemaerts has described and figured such sprays in a case of limbal sarcoma. The tumour was considered on clinical grounds to be sarcomatous. The pedunculated part was removed and examined. It was found to be a haemangioma. The patient was treated at the Radium Institute, and after two applications the

tumour disappeared. A drawing of the eye will be found in my *Illustrated Guide to the Slit-Lamp*, p. 41.

*Miss E. M., aged 18 years.*—First examined at the Birmingham Eye Hospital in November, 1919. There was a raised whitish mass on the temporal side of the left cornea and limbus. It was crescentic above and pyriform below. It measured 7·5 mm. in its horizontal diameter and 3 mm. vertically. About one quarter of the tumour covered the rim of the cornea. The tumour was surrounded by a purplish zone of dilated capillaries. The cornea was clear and vision unaffected. The patient said that the tumour had been growing "for some time." A diagnosis of limbal sarcoma was made, and the patient was sent to the Radium Institute.

On November 10, 1919, an eye spatula 8 mm. square, containing 3·5 milligrammes of radium element was applied in actual contact with the growth, *unscreened*, for 45 minutes.

On December 3, 1919, the same treatment was applied for 45 minutes. The growth was now smaller, and the dilated capillaries less conspicuous.

The patient was treated again on January 2, 1920, on February 4, and on March 10. The same apparatus was used on each occasion, unscreened, but the exposure was now only 25 minutes. The growth steadily decreased after each irradiation.

April 14, 1920, a similar exposure was made of 20 minutes' duration. On May 28 there was scarcely any trace of the growth. A final exposure of 15 minutes' duration was given.

In April, 1926, the patient was again examined. There was no trace of any growth, but there were a few enlarged blood vessels in the region of the original tumour.

The patient, now married, was seen again in 1930 and was found to be completely cured.

*Mrs. C. S., aged 57 years.*—This patient was first seen in November, 1925, at the Birmingham Eye Hospital. A drawing of her eye will be found in *An Illustrated Guide to the Slit-Lamp* on Plate III, Fig. E (facing p. 62). There was at the temporal limbus of the right eye a roughly triangular area of brown pigmentation. The corneal microscope showed that in addition to the main mass obvious to the naked eye there was a wide-spread invasion of the conjunctiva and of the peripheral part of the cornea with dots and islets of pigment. These were situated in the anterior part of the cornea. The case was shown to the Ophthalmological Section of the Royal Society of Medicine, where it was examined by Mr. Treacher Collins and others. The opinion was unanimous that the condition was a melanotic malignant growth, most probably an epithelioma. The patient was sent to the Radium Institute and the following régime was carried out:—

November 13, 1925, treated with 5 mg. of unscreened radium for

50 minutes. The effect of this irradiation was almost immediate. Under the corneal microscope migration of pigment was observed, and foci of brown pigment were changing to a murky yellow, and had a sclerosed appearance. The injection of the area affected was less marked. The main conjunctival mass had begun to shrink, and portions which raised the corneal surface were flattened down.

February 9, 1926. Very great improvement. The lower two-thirds of the obvious growth has disappeared. There remains a pigmented nodule the size of a split-pea at the upper aspect. A similar exposure was given.

April 7, 1926. Treatment repeated. July 7, August 24, October 20, similar treatment, but time reduced to 35 and 40 minutes.

November 25, 1926. Only a minute speck of pigment was visible to the naked eye. 3·5 mg. applied unscreened for 40 minutes.

February 21, 1927. The pigmentation is now visible only with a lens. The corneal microscope shows a general retrogression of the pigmentation, both in extent and intensity. Most of the islets have lost their brown colour and are yellowish and anaemic in appearance. Treated with 3·5 mg. for 30 minutes. September 27, 1927. Similar treatment. November 28. Similar treatment. February 1, 1928. Treated with 3·5 mg. for 30 minutes. Nothing can be seen with the naked eye. With the corneal microscope a few isolated spots of yellowish pigment can be seen.

January 24, 1929. A final application of 3·5 mg. for 20 minutes was given. Mrs. C. S. was seen again in September, 1931. With the slit-lamp a few isolated dots of pigment are visible here and there in the conjunctiva.

Mrs. C. S. was last seen on December 5, 1931. A careful examination with the slit-lamp showed a small collection of pigment dots in the region of the old tumour, forming a triangle. There were also some dots in the superficial part of the cornea, in the same situation that they originally occupied. There seemed to be more of them than there had been at the last examination, and so it was decided that a final radiation was necessary.

*Miss R., aged 23 years.*—This patient was first seen on March 2, 1928. She was referred to me by Mr. D. Priestley Smith. In the right eye there is an area of pigmentation in the conjunctiva close to the limbus, north-east of the cornea. This discoloration was first noticed a year ago, and the patient is quite sure that it is extending. Mr. Priestley Smith considered it to be a melanotic carcinoma, and I agreed with him. The patient was sent to the Radium Institute. On March 28, 1928, an irradiation was made for 30 minutes with 3·5 mg. of unscreened radium. May 3, 1928. The patch was decidedly smaller. The treatment was repeated. June 13, 1928. The pigmentation has almost disappeared. Treated

with the same plate for 25 minutes. August 13, 1928. Treatment repeated for the last time. There is no sign of any pigmentation.

September 13, 1931. Three years after the first examination. A careful examination with the corneal microscope shows no trace of any pigmentation.

*Mrs. N., aged 25 years.*—I have unfortunately been unable to find my notes of this case, nor have I been able to see her again, as a letter was returned marked "gone away, no address." The following notes were made at the Radium Institute:—

November 11, 1927. A limbal tumour of the right eye was excised by Mr. Harrison Butler. It was examined and found to be haemangioma. The growth recurred. At date: there is a soft, non-ulcerated yellowish-pink growth on the inner half of the right eye. It is just beginning to creep over the adjacent part of the cornea. There is a considerable degree of sub-conjunctival haemorrhage at the outer part of the globe. Movement of the eye-ball is unaffected. The iris reacts normally. Vision not affected. Treated with 10 mg. of radium unscreened for 40 minutes.

December 19, 1927. Very little change in the appearance of the tumour, but patient says that it is paler in colour. Treated with the same strength for 40 minutes.

February 2, 1928. Slight but definite improvement. The growth is flatter, and paler, and there is less sub-conjunctival haemorrhage. March 31, 1928. Screen treatment tried. Radium plate 10 mgs. P.B. 1/10th $1\frac{3}{4}$ hours. This caused a sharp reaction.

June 7, 1928. A treatment with unscreened 10 mgs. for 54 minutes. After this the patient was lost sight of, but it is reasonable to suppose that had she not been cured she would have reappeared.

I have a recollection of another case of limbal sarcoma that was rapidly cured by radium treatment, but I cannot trace the notes.

These cases are the only examples of limbal tumour that I have been able to collect from my practice during the past fifteen years. All have been treated with radium, and all have made a complete recovery. There may have been others but I have no recollection of them.

I have to thank the directors of the Radium Institute for the great interest they have taken in these cases and for furnishing me with the detailed notes of the methods employed.

# THE INTRACAPSULAR EXTRACTION OF CATARACT

## An Analysis of 67 Cases as a plea for its wider adoption

BY

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THE intracapsular extraction of cataract has long appealed to many ophthalmic surgeons. Formerly it was considered necessary to wait until a cataract became mature, and the patient was often condemned to an indeterminate period of reduced amenity and crippled activity due to impaired vision. Hence it is that the operation of extracting the cataract, mature or immature, in its capsule makes a powerful appeal to many ophthalmic surgeons.

The purpose of this paper is to put before the reader the results of a series of attempts on the part of the writer, and to leave him to judge for himself whether or not the operation described is worth taking up. The operation is substantially that which has been done in Europe and America for many years.

My interest was originally aroused by a film shown by Dr. Sinclair, of Edinburgh, at the Ophthalmological Congress in London in 1925. In the same year I saw an intracapsular extraction performed at Edinburgh by Dr. Traquair. Subsequently the results published by Professor Elschnig, of Prague, proved a powerful stimulus. To him and to Dr. Traquair I wish to express my intense gratitude for explaining the operation to me in personal letters, and for help in connection with the literature.

The essence of this operation is that the surgeon takes over complete control of the eye from the patient. This is not achieved by the will power of the patient, but only by the correct use of novocaine injections, and stitches to control the muscles likely to offend.

### Technique of the Operation

The usual attention is paid to the health of the patient, and to the eye, and the same preparation for operation as for extracapsular extraction is carried out. Two hours before operation a sedative is given, *e.g.*, chloral and potassium bromide, 12½ grs. of each. (Opium and its derivatives have too often been disappointing, and make the patient sick). The patient enters the theatre less nervous and less agitated, and his subsequent behaviour on the table is more lethargic, hence there are no sudden movements to embarrass the surgeon. One hour before operation the pupil is dilated by homatropine and cocaine drops.

Fifteen minutes before reaching the operating table, the process of rendering the eye anaesthetic begins:—

Cocaine hydrochl. 2 per cent. solution 2 minims.

Cocaine hydrochl. 3 per cent. solution 2 minims two minutes later.

Adrenaline 1 in 1,000 solution 2 minims two minutes later.

These two latter are used alternatively every two minutes, *i.e.*, the eye has had cocaine at least five times and adrenaline at least three times before being brought to the theatre. Here the patient gets a few more drops of each, and two drops of cocaine into the fellow eye. Tincture of iodine or similar antiseptic is applied to the skin of the face, to as much of the field as is not subsequently covered by towels or gauze.

1. *Paresis of Orbicularis Palpebrarum.*—Novocaine 1 per cent. with adrenaline solution 1/10,000 is now injected to paralyse the orbicularis palpebrarum muscle, incidentally also anaesthetizing that region. Twenty minims of the solution are ample. The needle is inserted about 1 centimetre external to the external canthus, and slightly below it, some fluid is injected slightly upwards to catch the nerve supply to the upper fibres of the orbicularis, a little more slightly downwards to catch the lower fibres, and the largest quantity with the needle directed backwards and downwards towards the lobule of the ear, but inserted more deeply, to catch the diverging fan of fibres of the facial nerve.

1*a*. *To ensure Post-operative Closure of Eyelids.*—After withdrawing the needle, two minims of the same solution may be injected just above the cilia, opposite the middle of the margin of the upper lid, and a stitch inserted, chiefly to use for complete closure of the lids after the operation, before the paralysing effect of the novocaine on the orbicularis has disappeared. This suture is also useful to lift up the lid during the course of the operation, and in the post-operative inspections. The conjunctival sac is irrigated with a mild mercurial antiseptic, followed by normal saline.

2. *Control of Eyeball.*—A stitch is now to be inserted below or into the tendon of the superior rectus. This stitch and suture give the surgeon wonderful control of the eyeball. Five minims of the same 1 per cent. novocaine, and 1/10,000 adrenaline in solution may be injected subconjunctivally into the region of the insertion of the muscle if the surgeon is not satisfied with the cocaine anaesthesia already present.

3. *Complete Anaesthesia of Eyeball and Partial Anaemia of Uvea.*—The retrobulbar injection of 8 minims of 2 per cent. novocaine, and 1/1,000 suprarenin is now made by inserting the hypodermic needle deeply into the orbit just above its lower outer angle, through or almost below the lower lid, aiming for a point as near the entrance of the optic nerve into the eyeball as is possible without touching the optic nerve itself. It is easy to verify the

freedom of the eyeball and the optic nerve from any part of the needle by asking the patient to move the eye in various directions before gently injecting the fluid; indeed, slow movement of the eye during the injection ensures the novocaine reaching most of the ciliary nerves and vessels surrounding the optic nerve. It is important to limit the amount of fluid injected; the lack of that knowledge caused four eyes to be lost through vomiting followed by expulsive haemorrhage.

The lid speculum is now inserted. It is important to use a variety that lifts itself off the eyeball even if it should be a little more clumsy in appearance and in insertion and removal, and even if it does have parts which sometimes appear to be slightly in the way of the surgeon. The speculum of Olah is used by us, and though it has some of the disadvantages just indicated, its ability to lift itself off the eyeball and the absolute impossibility of any spasm of the orbicularis when it is in use is more than adequate compensation for its faults. Dr. Traquair has devised a lighter speculum without the above disadvantages.

4. *Conjunctival Flap.*—The incision may now be made, but owing to the importance of obtaining a good conjunctival flap, I have lately taken to preparing the latter before using the Graefe knife. Any sized conjunctival flap can be prepared with scissors beforehand, but it is not advisable to make it too big, as it rather hinders the view of the knife in the anterior chamber unless the flap is skilfully held out of the way by the assistant. If too big a flap is laid back flat on the sclera before the limbal incision is made, I found that the knife in making the counterpuncture generally made a second smaller conjunctival flap, thus defeating the object of preparing the flap beforehand.

5. *Incision.*—The ordinary limbal Graefe incision is now made, but bigger than usual. Three-fifths or three-quarters of 180° hardly seems sufficient; the lens in its capsule is so much bigger than the ordinary nucleus that one is almost startled by its magnitude. The capsule is likely to tear in bringing the lens out of too small an incision and though the ordinary incision can easily be enlarged by a sharp Graefe knife cutting each end downwards, or by the more clumsy scissors, it is certainly more satisfactory to make the incision large enough at the commencement. Only eyes with very shallow anterior chambers require the outward enlargement of the incision, and in some rare cases even the entire making of it from the outside. It is too late to enlarge the incision during the delivery of the lens as both hands are then fully occupied, and it is a pity to tear the capsule just at the last moment.

I have never found it necessary to make an incision of fully 180° but have had good cause to regret having made it 135°. On the whole 150° to 160° should be sufficient. The healing process in the

cornea does not seem to be retarded by the size of the incision. The less scleral the incision is, the less is the haemorrhage. Should any blood get in, it is advisable to irrigate it out before it has had time to clot and adhere to the iris, and it does not take thirty seconds to stick to the iris quite tenaciously. Having removed all blood from the anterior chamber and having stopped any source of haemorrhage by applying adrenaline pledgets, we are free to proceed with the iridectomy. There are three varieties.

6. *Iridectomy.* — Professor Elschnig uses a small transverse incision into the junction of iris and ciliary body, and is satisfied with its results. Others use the peripheral iridectomy to which we are accustomed in the Hess extraction out of the capsule. Then there is the complete iridectomy.

Personally, I have never had the courage to rely on Elschnig's "iris-root" incision, but have been very pleased with the peripheral iridectomy which appeals much more to me than the complete iridectomy, as the latter by cutting the sphincter pupillae spoils not only the cosmetic result, but, far worse, does not give the sphincter the chance to pull the iris away so well from the limbal incision. A peripheral iridectomy 2-3 mm. broad, but hardly as long, seems to achieve its object well enough. It is true that one sometimes has to replace a prolapsed iris, or even abscise it, but the proportion is small.

7. *Conjunctival Sutures.*—The next step would seem to be the extraction of the lens, but this should be postponed till after the conjunctival stitches have been inserted, generally two, one each at the junction of the middle third, with the outer and inner thirds, or slightly farther out if the surgeon prefers to insert others after the extraction of the lens. It is good practice to include in the stitches a good piece of the conjunctiva, both limbal and peripheral, so that if need be, these sutures can be used to exert a certain amount of traction to bring the two lips of the limbal wound together fairly firmly. A preliminary loose knot is made on each side but not tied, and the portion of the suture overlying the incision is pushed out of the way by making a rather long loop. There is no doubt that these sutures do get in the way while extracting the lens entire, unless they are made long and kept out of the way of the incision.

8. *The Lens Extraction.*—It is well to pause a moment to see that everything is ready, to clear the suture loops out of the way, to run a thin iris repositor along the whole incision to make sure there are no uncut subconjunctival fibres which might hinder the free exit of the lens, to see that there is no agglutination of the edges of the wound by fibrin from the unavoidable though possibly very small amount of haemorrhage, and to make sure that the view of the lens surface is unembarrassed by blood or iris pigment. Irrigation of anterior chamber with normal saline ensures a clear picture, if such is not previously present.

The assistant is ready with thin straight forceps in each hand to push or lift any embarrassing structure out of the way. The surgeon takes a tenotomy hook, or variation of it, in his left hand, and the capsule forceps in the right. Of capsule forceps for grasping the lens capsule without rupturing it, there are several varieties, the main requirement of each being a smooth tip, neither cutting nor tearing, yet holding on. The next requirement is the correct angle to enable the reversal of the lens surfaces to be achieved by the forceps.

As in all senile cataract extractions, here too the surgeon takes the precaution of having various spoons and loops ready in case there are vitreous complications.

The forceps slides down behind the cornea into the pupil and behind its lower margin, so as to lie between iris and lens capsule but not beyond the latter. In the last two or three millimetres of its course, it is slid down with the points open, but not beyond a maximum of three millimetres, two are better. The points are then depressed gently about one millimetre into the substance of the lens and gently closed grasping the capsule. It is better to be too deliberate or too gentle than the reverse. Coarse handling ruptures the capsule and the operation becomes the ordinary extra-capsular extraction; gentle handling can be repeated until the capsule is grasped successfully. This can be both felt and also seen by the light reflexes from the folded capsule grasped in the forceps. Now the suspensory fibres of the lens have to be ruptured without tearing the capsule. This is achieved by gentle swaying or displacement of the forceps holding the lens, towards each side for 1—2 mm. It is advisable to take about twenty seconds over this process. When a fair number of lateral suspensory fibres have thus been ruptured, and this can only be surmised by watching the movement that one has oneself imparted to the lens, the lower ones are then ruptured by gentle stretching. The extraction of the lens in its capsule now really commences. The capsule forceps having once gripped the capsule never lets go and now begins to rotate the lower extremity of the lens forwards so that ultimately this comes out of the incision first. In other words, the lens is rotated almost 180° around a horizontal axis parallel to a line joining the external and internal canthi and comes out with its posterior surface lying against the cornea. This process of rotation automatically ruptures the remaining superior and inferior suspensory fibres of the lens by overstretching them. The limiting membrane of the vitreous, perhaps not demonstrable microscopically, but clinically a very decided entity, tolerates this procedure well and neither it nor the lens capsule break nor tear if the manipulations are gentle. But the capsule, that very small bit of it that is grasped, cannot be expected to hold and pull the whole of the lens out without any

external assistance. The moment, therefore, that the forceps begins rotating the lens from below, we start pushing the lens from behind and helping it with the tenotomy hook (or its variation), pressing first in the region of the limbus below and, as we see and feel the lens coming, the instrument gradually follows up and pushes along the lens by gentle pressure exerted on the limbus and cornea at the part where the edge of the lens is lying at each instant in its course behind the cornea. This direction of application of this pressure is, of course, such that together with the lesser traction of the capsule forceps the lens is pushed towards the incision. Thus even in the extraction in the capsule we also resort to expression, which latter should be the correct name for the old operation of extraction.

Gradually the wound opens wider and wider, perhaps slightly encouraged by the assistant holding or pushing obstructions such as the conjunctival flap out of the way, and we see the glistening smooth surface of the lens capsule presenting. Once we realize that the major diameter of the lens is passing through the wound the pressure behind is lessened, and, once it has passed, gentle rotation or a swaying movement to and fro of the lens disengages it from the lips of the wound and it is removed entire. By now the pressure on the eyeball has long been stopped and the two conjunctival sutures are immediately pulled tight and tied in order to prevent any risk of loss of vitreous. The surgeon may now attend to the toilet of the wound.

9. *Toilet of the Wound.*—The iris is replaced by pushing the repositor under the flap and further sutures are put in if it is thought necessary. It is advisable to consider the utility of any suture as a tension stitch, if there does not seem perfect co-aptation of the wound.

When the pupil is quite round again (some gentle persuading of the iris by the repositor may be required before this is achieved) the superior rectus stitch is withdrawn and the speculum removed, the conjunctival sac is rinsed out with saline, and two drops of eserine solution instilled. One may encourage the patient by showing him that the eye can now count fingers and after that he is asked "gently to close both eyes." He cannot completely close the operated eye on account of the paresis of the orbicularis palpebrarum, but the stitch in the upper lid is now fixed to the cheek with adhesive plaster and keeps the two lids well apposed. The bandage is put on and the patient wheeled back to bed. The bandage may be uniocular or binocular. I have generally used the binocular Moorfields bandage for the first day as the patient then does not attempt to move the unoperated and with it the operated eye.

10. *Post-operative Treatment.*—The post-operative treatment is

the same as that of an extracapsular extraction, except that it is probably wiser to use eserine at the first dressing next morning. The pupil dilates equally well after the use of eserine for two days. Atropine can then be instilled. I have had no bad effects from the patient sitting up in an easy chair next day, and this treatment shortens the usual complaints due to the discomfort of being afraid to strain when in bed. In fact it is the routine practice unless any complications have set in during the first twenty-four hours.

I can confidently recommend the conjunctival suture as a great source of relief from anxiety to the surgeon as regards post-operative sequelae, in fact all his troubles occur while the patient is on the operating table, where he has every advantage in his favour, and the eye is practically immobile and totally anaesthetized. The stitches either come out of their own accord from the sixth to the fourteenth day, according to the depth of their insertion, or may be removed.

## Results of 67 Cases

The analysis of the cases is very interesting, reflecting as it does, the psychological effect of failure and success.

My losses were heavy, too heavy to continue the operation if the fault could not be remedied. But of the five cases I lost, the fault could easily be adjusted now in the light of the experience gained, and the reader, by avoiding my mistakes, need have none of these losses. I lost the fourth case through not possessing a self-lifting speculum ; at the critical moment when the vitreous presented after delivery of the lens, my inexperienced assistant unfortunately depressed the speculum instead of elevating it, and the vitreous shot out.

I did three extracapsular extractions after this failure before I could summon up courage to make the fifth intracapsular attempt ; in this the capsule burst early, so that it became an easy extracapsular extraction. At the sixth attempt the capsule ruptured on delivery of the lens (the incision had been too small), still it was a step onwards ; the seventh was successful, but in the eighth I again ruptured the capsule on delivery of the lens.

In the ninth to thirteenth attempts I burst the capsule early; they all became easy extracapsular extractions.

One was obviously losing heart, for by now, in addition to the above, seven extracapsular extractions had also been done by the ordinary method.

The fourteenth attempt achieved a complete intracapsular extraction and from the sixteenth the results improved. I lost vitreous in the eighteenth case, but a subsequent iridotomy gave 6/9 vision.

Everything went satisfactorily until I lost vitreous in the twenty-ninth case; the patient began to vomit two hours after the operation, producing expulsive haemorrhage. I lost that eye. I blamed the loss of vitreous and his blood pressure, 185/100, but the next three losses taught me otherwise.

I lost the forty-second, forty-sixth and forty-seventh cases by expulsive haemorrhage; 42 and 46 lost vitreous on the table, 47 did not and had a blood pressure of only 120/85. All four counted fingers on the table but began to vomit a couple of hours after the operation and continued to do so until expulsive haemorrhage had destroyed the eye. This was too much! It occurred to me that I might be using too large a retrobulbar injection. I therefore limited the amount to a maximum of 8 minims of 2 per cent. novocaine and in the last 21 cases there have been no complaints of sickness, still less of vomiting. Thus the five losses (*i.e.*, 7·5 per cent.) cannot be set down as a fault of the operation but rather to the lack of skill and knowledge of the surgeon. I am happy to say they all had a remaining good eye either previously or later successfully deprived of its cataract.

Now having explained the losses, let me classify the remaining 62 cases.

34 were removed in the capsule—51 per cent.
8 burst the capsule at the moment of delivery—12 per cent.
20 burst the capsule early, *i.e.*, became ordinary extracapsular extractions—30 per cent.

The late bursting of the capsule can almost be counted as a complete removal since the lower two-thirds of the pupil usually remain jet black and the little remaining cortex if not easily removable at the time by spoon, irrigation or suction syringe, does not embarrass vision, though it does delay the healing of the eye and causes much more redness than the complete removal of the lens in its capsule.

One has reasonable hopes of reducing the figure of 30 per cent., although, when it is remembered that these figures embrace all kinds of cataracts, and that a young capsule (under 40 years) and also a very tight one (with swollen cortex) rupture more easily, it would be easy with selected cases to get a much higher percentage of complete intracapsular extractions.

### Other Complications

*Prolapsed Irides.* — There were five, none large. One was massaged back into position with the help of eserine, and two were replaced with the repositor, the patients remaining in bed, and two on the operating table.

*Iridotomies.*—Four had to be performed, the pupil having been drawn up by escaping vitreous in two cases, the third where in

spite of a complete iridectomy on the table, the iris subsequently became drawn up, and the fourth where fear of damaging the presenting vitreous at the operation prevented me from getting the pupil back to normal shape. They all got 6/5—6/12 vision.

*Hyphaemata.*—These seemed, if anything, fewer but more severe than with the extracapsular extraction. When they did occur they were always traced to a definite trauma during the first six days of convalescence.

In three cases the anterior chamber filled completely with blood so much so that there was not even perception of light after the accident. The stitches allowed the conjunctival flap to bulge but they never gave way and evidently stopped the haemorrhage. Naturally one was very anxious about the blood getting into the vitreous but this did not occur, the blood was all absorbed fairly fast and left no after effects. They all had undilated pupils and 6/6 vision six weeks after the operation. Apparently the limiting membrane of the vitreous does not rupture with the gradual but uniform increase of pressure.

*High Tension.*—One patient developed high tension some months after the operation but this yielded very well to a cyclodialysis.

One case of successful extraction in the capsule was a swollen cataractous lens producing acute glaucoma in a woman of 58 years. The operation was difficult but the patient has now got a round pupil and 6/9 vision.

*Loss of Vitreous.*—In my first attempt at intracapsular extraction I lost vitreous. Owing to over-gentle holding of the unruptured capsule with the forceps I let the capsule go. I was too timid to get a grip on the apparently tense and very shining capsule of the lens, of which by now fully one-third was delivered. I had to rely on expression and this was too forcible, and I expressed some vitreous with the intact lens. The result was 6/12 vision with a plus 8·0 D. sphere and plus 6·0 D. cylinder three months later. At my fourth attempt I lost vitreous by the inopportune depressing of the speculum, and with it I lost the eye as before mentioned among the complete losses.

The twenty-ninth and forty-sixth cases lost vitreous on the table, probably by clumsiness on my part. They could count fingers on the table after the operation but began vomiting two hours after the operation, and I lost these two eyes and the forty-seventh by expulsive haemorrhage. Had the forty-seventh case also lost vitreous, which it did not, and had it taken more than half-an-hour to do, I might have regarded the expulsive haemorrhages as due to that cause; fortunately for my subsequent cases, the true cause, too large a retrobulbar injection, came to light over this very case.

*Presenting of Vitreous without Rupturing.*—This is a very unpleasant complication. It occurred twice, and the anxiety lest the

external limiting membrane of the vitreous should give way during the inserting of the stitches to pull the gaping sclerocorneal wound together is exhausting. In neither case did it give way, yet one cannot hope for such good fortune in every case. The latter two were post-operative complications and have had the direct result of making the conjunctival stitch at the operation more of the nature of a tension stitch.

*Of Other or Delayed Bad Results.*—I have seen none beyond those above mentioned, and my first attempt was made in November, 1928.

The ADVANTAGES of the OPERATION are:—

1. Applicability to immature cataract, which is technically easier than swollen mature cataract.
2. Absolute lack of irritation of eye during convalescence. This is too striking for words; it must be due to there being absolutely no capsule or cortex to irritate the eye, which remains quiet and white, showing no ciliary irritation whatsoever.
3. Early rupture of the lens capsule merely reduces the operation to the old and well-known extracapsular extraction. The capsule ruptures either early or on delivery, in either case it does not matter. I have never had one rupture half way, and this is one's main fear; apparently it is groundless.

DISADVANTAGES:—

1. Technically it is not so easy as the extraction out of the capsule. It is not a beginner's operation, but well within the reach of any surgeon of average capability.
2. The duration of operation is longer owing to the novocaine injecting and sewing of the conjunctiva, though the sedative to the patient, and the novocaine apparently keep him quiet, and the eye almost immobile.
3. There is no capsule to hold back the vitreous.

The older operations of intracapsular extraction have failed to give satisfactory results in the hands of others than their originators. Here is an operation which has stood the test at the hands of an operator of only moderate ability, who had to learn it chiefly from two or three letters from its exponents.

There must be an enormous number whose opportunities and experience are so much greater than those of the writer, that they can have no hesitation in trying and adopting this operation, which promises earlier and easier relief, and may be considered a distinct step in the advance of ophthalmology.

If the analysis of these results should result in a wider adoption of this operation, it will have achieved a useful purpose.

## REFERENCE

Kubik.—*Klin. Monatsbl. f. Augenheilk.*, May, 1929.

# IRIS ANAESTHESIA BY RETROBULBAR INJECTION AND PARALYSIS OF THE ORBICULARIS OCULI BY SEVENTH NERVE BLOCK

BY

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IT has been my good fortune during my period of residence at Moorfields to acquire practical experience of retrobulbar injection for the production of iris anaesthesia, and of seventh nerve block to obtain paralysis of the orbicularis palpebrarum, and I feel that some observations on these may be of interest.

## Iris Anaesthesia by Retrobulbar Injection

*Indications.*—Any condition where complete anaesthesia of the iris is valuable for operative purposes. In those cases especially where iris manipulation is accompanied by considerable pain and where general anaesthesia is frequently employed, as in iridectomy, for sub-acute glaucoma, for relief of tension in iris bombé, and for prolapse of the iris following cataract extraction. Thus pain at the time of operation is removed, and post-anaesthetic vomiting prevented.

### Technique

*For Iris Anaesthesia only.*—A 2 c.c. hypodermic syringe is used with a 1¼ inch needle. With a needle of this length, injury to the optic nerve is found experimentally to be impossible. 1 c.c. of 4 per cent. novocaine is used, a greater quantity being unnecessary; in fact, 0·75 c.c. rarely fails to produce perfect anaesthesia. The needle is inserted down and out through the lower lid, the patient being requested to look up, and the needle introduced just over the orbital margin, and passed gently back towards the apex of the orbit to its full length. With the needle in this position, the plunger should be withdrawn to make sure that the injection is not being made into a blood vessel. A small quantity of the fluid is injected during the insertion, and if care be taken to avoid the tarsal plate, this manoeuvre is usually painless. The situation is chosen as the one most likely to bring the point of the needle into the region of the ciliary ganglion lying between the optic nerve and the external rectus. Eight to ten minutes are allowed for full anaesthesia to be obtained.

*In Excision or Evisceration of the Globe.*—Three injections, each of 2 c.c. of 4 per cent. novocaine, are made similarly to above, down

and out and down and in through the lower lid and centrally above the middle of the tarsal plate through the upper. Thus 6 c.c. are given in all, this being the maximum amount required; I have performed excisions, with insertion of a glass ball, painlessly with 4 c.c.

*Complications.*—Two complications have been observed to follow retro-bulbar injections.

The first is haemorrhage occurring in the orbit. This usually comes on simultaneously with the injection, but may be some moments after. It rapidly reaches its maximum and the globe is greatly proptosed, the lids are practically immovable, and the cornea is exposed. The globe is under considerable tension and cannot be pressed back into the orbit. This serious complication has occurred four times in the following series of cases, and all when iridectomy was to be performed for acute rise in intra-ocular tension.

The first case was one with acute rise of tension in a chronic glaucomatous eye. Iridectomy was attempted with the eye in this condition and was accompanied by considerable vitreous loss, the eye ultimately being excised. The second was a case of sub-acute primary glaucoma; posterior sclerotomy was performed immediately and a firm pad and bandage applied. The proptosis was gone when the bandage was removed after 24 hours and the iridectomy was successfully performed under general anaesthesia five days later. The patient was 85 years old and suffered from marked arterio-sclerosis. The third case was one of rise in tension with chronic irido-cyclitis and complicated cataract. Paracentesis of the cornea was carried out, and the eye subsequently trephined successfully four days later. The fourth case was one of rise in tension without irido-cyclitis in association with a mature cataract in a patient aged 78 years. Following orbital haemorrhage no operation was performed, a firm pad and bandage was applied, and the patient sent back to bed. Five days later glaucoma iridectomy was performed with a novocaine injection into Tenon's capsule.

These cases have been mentioned in some detail as it is not always easy to decide what steps to take when this serious complication arises.

The second complication is paralysis or paresis of the inferior rectus. There appears to be a definite tendency for this muscle to be affected. It has been experienced more than once when the injection has been made in a similar manner, only through the upper lid above the middle of the tarsal plate. (This route has been used more frequently of late, and good anaesthesia, with paresis of the superior rectus only, obtained. Complete anaesthesia, however, has not always resulted. The writer is at present inclined to favour

this method, but has not used it in a sufficient number of cases to estimate its value). Thus paresis occurs in some 30 per cent. of cases, but has never prevented operation being successfully performed.

The completeness of the iris anaesthesia obtained by this method is well demonstrated during the extraction of an intra-ocular foreign body. If this, in process of being drawn into the anterior chamber by the giant magnet, becomes entangled in the iris, the iris retaining it is dragged upon, and the patient is in great suffering, sometimes even verging on collapse. If a retro-bulbar injection is now given, the foreign body is drawn absolutely painlessly out of the iris. This dramatic result was obtained in each case of intra-ocular foreign body in which it was employed.

*Retrobulbar Injection for Iris Anaesthesia was used in the following Operations at Moorfields during the first nine months of this Year.*

| | |
|---|---|
| Cataract extraction ... ... ... ... ... ... | 38 |
| Linear extraction ... ... ... ... ... ... | 1 |
| Corneo-scleral trephine ... ... ... ... ... | 8 |
| Iridectomy in sub-acute glaucoma... ... ... ... | 8 |
| „ „ secondary rise of tension ... ... ... | 2 |
| Abscission of iris prolapse following extraction ... ... | 3 |
| „ „ traumatic iris prolapse ... ... ... | 6 |
| Optical iridectomy ... ... ... ... ... ... | 2 |
| Iridectomy in iris bombé ... ... ... ... ... | 4 |
| Removal of intra-ocular foreign body ... ... ... | 5 |
| Saemisch section ... ... ... ... ... ... | 7 |
| | 84 |

The percentage of retrobulbar haemorrhage is thus seen to be small, and of the four cases in which it occurred three were without lasting injurious effects. They all took place in acutely inflamed eyes.

## Seventh Nerve Block

*Indications.*—When complete paralysis of the orbicularis with consequent inability to squeeze the lids is advantageous.

*Technique.*—A 2 c.c. hypodermic syringe with a ¾ inch needle is used and 2 c.c. of 4 per cent. novocaine is injected. The part of the seventh nerve aimed for is the trunk as it crosses the neck of the mandible. This site is found by placing the forefinger in front of the external auditory meatus and asking the patient to open his mouth wide when the finger is found to dip into a depression caused by the condyle of the mandible moving forwards on to its articular tubercle. On closing the jaw the finger is forced out of the depression by the condyle. The injection is made immediately

below this landmark until the needle strikes bone, where 1·5 c.c. is injected. The needle is then slid a little way over the zygoma and the rest of the injection is given so as to complete the paralysis of the orbicular branches. This avoids the necessity of injecting the lids themselves and their consequent swelling with difficulty in obtaining complete exposure of the globe. This method rarely fails to produce complete paralysis of the orbicularis palpebrarum.

*Complications.*—As the injection is made round the main trunk of the nerve, all muscles supplied by it are affected, and one-sided paralysis of the orbicularis oris is experienced. Thus the patient should be warned of the consequent interference with speech. The paralysis has disappeared in six hours.

### Conclusions

Retrobulbar injection, as described, is normally followed by complete iris anaesthesia, which definitely adds to the safety of the operation, and the comfort of the patient.

Orbital haemorrhage following retro-bulbar injection, shows a tendency to occur in inflamed eyes.

Paralysis of the orbicularis oculi is simply and safely obtained by the above method, and squeezing being thereby abolished, operative risk is minimized.

I wish to express my thanks to all the surgeons on the staff of Moorfields for permission to publish these cases.

## ANNOTATION

### Libraries of Medical Men and their ultimate disposition

Our attention has been called to this subject by Dr. Park Lewis, of Buffalo, who bewails the fact that too often the owner makes no provision for his books after his retirement or decease. In such cases, especially after death, no one knows what to do with the books. Frequently they are sold with the practice; sometimes they are dumped on the nearest library; in some cases the executors dispose of them for what they will fetch in the second-hand book market; in other cases the choicer books are distributed among friends and acquaintances, and the remainder assigned to the dust heap.

It must be emphasized that, as Dr. Park Lewis says, in most instances the current books of a doctor's library are almost worthless from a commercial point of view; but to a medical library they may

be most valuable, for by their means gaps may be filled in sets of periodicals, and more recent editions of standard works may replace earlier editions on the shelves in current use, while monographs and reprints can usually be sorted out, and those worth preserving, bound.

In this instance we are not concerned with the rarities of medical literature. If a medical man be so fortunate as to possess copies of the first editions of William Harvey's *De Motu Cordis*, or Edward Jenner's "Inquiry," he will be wise to dispose of such at a proper price during his lifetime.

We imagine that most medical libraries would welcome the gift of part or all of a doctor's library. In this country the medical libraries are constantly receiving gifts of this sort.

The International Organization for the Campaign against Trachoma is forming a library at Amsterdam to deal with the problems of trachoma, and will be pleased to receive books or papers on trachoma and ancillary subjects.

In the past, the Bowman Library has been enriched from time to time by valuable presents from, among others, Sir William Bowman, Mr. Nettleship, and the executors of Mr. Jessop.

The management of this Journal will be prepared to consider the occasional publication of lists of *desiderata* of ophthalmological libraries, if librarians care to submit such lists, which should not exceed half-a-page.

## ABSTRACTS

### I.—MUSCLES

(1) **Fisher, J. Herbert (London).—Ocular muscles, movements and judgments.** (The Bradshaw Lecture: Royal College of Surgeons of England, November 13, 1930). *Lancet*, November 29, 1930.

(1) It might be difficult to find a clearer description of the relations of the eyeball to its adnexa, or a more useful recent contribution to the subject of concomitant strabismus than that given by **Fisher**, a description which is not only clear but possesses that "racy" character which is such a help to the understanding.

After describing the relative lengths and strengths of the external ocular muscles and their tendons, their insertions and their directions of pull, Fisher discusses the capsule of Tenon, and shows how really impossible it is to support the old view that the eyeball rotates in

the capsule. "Were it to do so," he says, "the whole intra-ocular circulation would be disturbed, or the centripetal and centrifugal blood vessels would be lacerated, while the fibres of the optic nerve would be required to play freely up and down its dural sheath like a piston-rod in its cylinder." (The author perhaps means piston rather than piston-rod). In reality, "globe and capsule move together upon the bed of fat. . . The muscles of the eyeball are the only muscles of the body which enjoy the advantage of playing in an oleaginous lubricating medium; the precise results which they achieve show the orbit to be an ideal gearbox." The precise action of the muscles in moving the globe, and their mutual balancing is described exceedingly well, and is assisted by a very explanatory diagram. The author refers to what he calls the "paradox" in operating on the internal and external recti. Why is the effect so small if we tenotomize the relatively weak external rectus, in spite of the pull of the stronger internal rectus; and why is the effect so much greater in tenotomy of the internal rectus, in spite of the weak pull of the external rectus? Somewhat condensed, the answer given is as follows. The total power of abducting the eye must be equal to the total power of adducting it; similarly with elevation and depression, and with rotation (wheel movement). The power of the external rectus in abduction plus that of the two oblique muscles must equal that of the internal rectus plus that of the superior and inferior recti, in adduction. In tenotomy of the external rectus we do away with the pull of a weak member of the abductor group, whereas in tenotomy of the internal rectus we do away with the pull of a strong member of the adductor group. The effect is thus greater in the latter case than in the former. Further illustration of the mutual relative strengths of the various muscles is given by reference to the angles made by the various muscles with the sagittal plane of the orbit. Coming to the important question of concomitant strabismus, Fisher adopts Donders' theory in the main and rejects that of a hypothetical fusion centre. This is what he says of the "fusion centre": "The conception of a higher fusion centre in the brain may be a convenient assumption for the purpose of discussing unsolved problems, but in my judgment can be no more than this. Among all the injuries and diseases of the brain on record, I am unaware of any case in which a patient as a result of a local cerebral lesion has lost the power of stereoscopic vision without other disturbances of visual function; a series of such cases would be necessary to demonstrate the presence and situation of the "fusion centre" if it exists anywhere but in the brains of those who postulate it." This abstract would exceed space limits were the reviewer to mention more on this subject than that the author further illustrates his views by reference to the angles previously mentioned, and that he expressly states that the Donders theory does not fully

satisfy every case of convergent concomitant, to say nothing of its insufficiency in divergent concomitant strabismus of myopes. Nor would it be feasible, or indeed advisable, to compress the author's philosophic paragraphs upon ocular contribution to equilibrium, while to do the same thing to his "Visual Judgments in Sport" would cause the reader to miss the enjoyment of that racy style to which reference was made at the commencement of this abstract. This last part of Fisher's lecture deals in the main with experiences of his own in connection with aviation, billiards, shooting, golf and football, and emphasizes the association of vision with the tactile and muscular senses in many sports and occupations.

ERNEST THOMSON.

(2) **Gorst, P. Eldon (Liverpool).—Controlled recession operation for the treatment of convergent strabismus.** *Lancet*, August 9, 1930.

(2) **Gorst** describes a tenotomy operation with controlling sutures designed to postpone the determination of the exact amount of setting back for from 5 to 7 days. A useful abstract of the description would be very difficult, and readers are advised to study the details in the original.

ERNEST THOMSON.

## II.—CORNEA

**Wright, R. E., Lt.-Col., I.M.S. (Madras).—The importance of keratomalacia as a cause of blindness in India.** *Lancet*, April 11, 1931.

**Wright** has found that keratomalacia is, as far as he is able to estimate, the greatest cause of preventable blindness in the Madras Presidency in the first five years of life. It is a much greater cause in these years, in India, than is ophthalmia neonatorum in England and Wales. The disease also occurs in adults "to an appreciable degree." But while this is true of India as a whole it is not true as regards the whole of India. Thus this deficiency disease is practically unknown in the Punjab, where the inhabitants are largely wheat and not rice eaters and also consume larger quantities of milk and milk products and other vitamin A-bearing foods. The disease is probably due not only to deficiency in vitamin A but also to deficiency in other vitamins. Crude cod liver oil in suitable doses is the most effective agent in eliminating the major signs and symptoms, and cod liver oil contains vitamins B, C, and D in addition to A. The foregoing abstract represents the principal facts

of interest to ophthalmologists for, as the author himself says, "In the present state of our knowledge the many interesting problems connected with this deficiency-complex are really more of academic interest than of practical importance to the ophthalmologist and public health worker. The discovery of the particular deficiency which is responsible for certain signs and symptoms is a problem which may well be left to the research worker. . . . The general practitioner or ophthalmologist cannot do more than control those cases which come within his sphere of activities by the simple method of administering cod liver oil. The issue of cod liver oil on a large scale as a prophylactic measure in India would hardly be taken seriously by those who are responsible for the framing of our budgets." Meanwhile, the author indicates, the prevention of the disease is a Governmental question of improving conditions of living and is bound up with the adjustment of the population to its food supply.

ERNEST THOMSON.

## III.—MISCELLANEOUS

(1) **Shaw, M. (London).—Eye paralysis in diphtheria.** *Guy's Hospital Reports*, p. 247, April, 1931.

(1) **Shaw** holds that the presence of ocular palsies in diphtheria is of prognostic significance for it indicates a susceptibility on the part of the patient to diphtheria toxin, and must be taken as a warning of the possible advent of more serious complications, such as cardiac, diaphragmatic and pharyngeal palsies. Susceptibility on the part of the patient, rather than severity of the disease, is the determining factor in ocular palsies, for these have been seen in mild cases and in cases in which very large doses of antitoxin (72,000 units) were administered early. It would appear that the use of antitoxin has not diminished the frequency of ocular complications.

The most frequent ocular lesion is paralysis of accommodation, generally bilateral, but not necessarily equal. Its frequency is variously estimated as from 5 to 27 per cent. of all cases of diphtheria. The toxin probably spreads to the eye ***via*** the lymph channels when faucial infection is present, though a haematogenous route must exist when the primary focus is more peripheral. As ocular palsies usually occur during the third and fourth weeks of the disease, the primary focus has generally healed and in mild cases may have been overlooked.

Other ocular lesions are paralysis of the extra-ocular muscles, seen in 3 per cent. of the author's cases; total oculo-motor palsy

and more rarely lesions of sensation, concentric contraction of the fields of vision and bilateral choroido-retinitis.

In the treatment of paralysis of accommodation, antitoxin and eserine were found of no value. The prognosis is good, there being a tendency to spontaneous recovery.

**ARNOLD SORSBY.**

(2) **Poos, Fr. and Sartorius, F.** (Münster, i.W.).—**Experimental researches on the problem of a tuberculotoxic origin of sympathetic ophthalmitis. (Experimentelle Untersuchungen zur Frage einer tuberculotoxischen Genese der sympathetischen Ophthalmie (Guillery).** *Arch. f. Ophthal.*, Vol. CXXIV, p. 566.

(2) Guillery had shown by experiments on rabbits that on implanting reed sacs (*Schilfsäckchen*) containing active tubercle bacilli into the vitreous a uveitis was set up in that eye and in the second eye, and this inflammation he regarded as closely analogous to the sympathetic ophthalmitis in man. This led to the hypothesis that toxins arising from an injury to an eye, with destruction of uveal tissue, can cause a uveitis in that eye and may similarly affect the second eye, but it is the toxins from some distant tuberculous focus circulating in the blood that determine the onset of sympathetic ophthalmitis in both eyes: the choroid of the second eye was sensitized to the tuberculotoxins by a primary non-tuberculotoxic inflammation set up in it by the products of tissue destruction in the first eye, the injury of the latter thus playing an important rôle. It was argued that in every case of sympathetic ophthalmitis in man arising in this way there is an active tuberculous focus in some part of the body, even if no clinical evidence of it can be found.

In this research by **Poos** and **Sartorius** the experiments of Guillery were repeated and extended, and while they confirm his findings as to the production of an inflammation in the second eye after introduction of similar sacs into the other eye, they maintain that there was only a slight reaction in the form of lymphocytic infiltration, discovered only on histological examination.

They find no proof for the theory of a tuberculotoxic origin of sympathetic ophthalmitis as enunciated by Guillery, because (*a*) the inflammation in the eye in which the sacs were implanted showed the appearances, not of sympathetic ophthalmitis, but of a septic endophthalmitis. (*b*) A similar result was obtained in the second eye when the sacs were inserted behind the first (so that the injury to the latter was not a necessary factor), and (*c*) when they were placed in an empty socket (in which case any sensitization of the second eye to the tuberculotoxins by an inflammation arising from destruction of uveal tissue in the injured eye was out of the

question). (*d*) In cases of severe chronic experimental tuberculosis in rabbits an injury to the ciliary body did not produce a progressive uveitis in spite of the presence of tuberculo-toxaemia.

The changes in the uvea of the second eye produced in this manner are regarded by the authors as a symptom of a general reaction of the whole reticulo-endothelial system to small doses of toxins, and have no relation to the sympathetic ophthalmitis in man.

THOS. SNOWBALL.

(3) **Ahlbom, H. (Stockholm).—A new method of localizing foreign bodies in the eye. Teleradiography with visualization of the cornea. (Ein neues Verfahren zur Lokalisation von Fremdkörpern im Auge. Fernröntgenaufnahmen mit Sichtbarmachung der Hornhaut).** In English, *Acta Radiol.*, Vol. XII, p. 212, 1931. In German, *Acta Ophthal.*, Vol. IX, p. 1, 1931.

(3) **Ahlbom** presents a brief summary of the more important methods described in the literature for radiographic localization of foreign bodies in the eye. He then gives an account of a new method which is based upon the taking of two images in two planes at right angles to each other, one of them being a profile picture with the cornea visible. Both the pictures are taken with a focus-plate distance of 2·75 metres. The cornea is rendered visible in the lateral view through an aluminium wedge being placed between the patient's eye and the cassette. The patient is seated during the examination, and special measures are adopted to enable the investigator to control the direction of the line of vision during exposure. As an extra safety measure the principle of the so-called physiological method, *i.e.*, change of the direction of vision, is applied. The localization is carried out directly on wet films with the aid of patterns, which are drawn on transparent films employing direct measurement with a pair of compasses. No contact markers need to be attached to the eyeball.

ARNOLD SORSBY.

(4) **Poos, Fr. (Münster i.W.).—On the action of tuberculin on normal eyes. (Ueber die Wirkung des Tuberkulins auf normale Augen.).** *Arch. f. Ophthal.*, Vol. CXXV, p. 41.

(4) **Poos** continued the study of the subject discussed in the preceding article by observing the action of injections of tuberculin on normal eyes.

By repeated injections into the vitreous he produced in the second eye uveal changes, visible only histologically, that were similar to those obtained by the implantation of sacs, as mentioned above. It is not necessary to postulate for the production of an inflammation in the second eye any specific changes in the eye

receiving the injections that might lead to sensitization of the former to the toxin, because the same appearances were found in the uvea of the second eye on injection of the tuberculin into an empty socket, the gluteal muscles, or the circulation.

It is impossible to speak of a specific affinity of this toxin to the uvea, because in all cases showing a marked uveal reaction severe meningitis was also present. The action of tuberculin toxin on normal eye tissues is not specific, but is comparable to that of protein bodies generally.

Poos concludes that it is possible by appropriate dosage to produce in every case a lymphocytic reaction in the eye (uveitis) as part of the symptoms of a general intoxication, irrespective of the site in the body from which the toxin spreads.

The results of his experiments and his conclusions are thus similar to those arrived at in the work carried out previously with Sartorius.

THOS. SNOWBALL.

(5) **Widersheim, O. (Saarbrücken).—Vision and the work of the painter. (Das Sehen und das Werk des Malers).** ***Klin. Monatsbl. f. Augenheilk.***, Vol. LXXXIII, 1929.

(5) In this interesting article **Widersheim** sets out to discuss to what extent an abnormal physical visual impression influences the mental impression of the actual live object and affects the art of the painter. As sketching, toning, and colouring are the factors concerned here, only the works of such painters whose foremost aim is to remain true to nature in their representations are considered. Yet, in contrast to photography it must be borne in mind, that even the true-to-nature painter expresses his art and individuality by bringing out in the picture what appeals most to his emotions in what he sees. As we have to bring under our purview the onlooker as well, it should not be forgotten that practice, habituation and memory play a great part in visual appreciation. For example, shading represented in complementary colours escapes the inexperienced lay mind. Further, the object itself undergoes apparent changes in colour according to the time of day and of the year, the weather and intensity of light and locality; in size, *e.g.*, in mist, twilight, and on the horizon. Of a host of other sources of optical illusion, one may recall irradiation, colour-contrast, colour-perspective, and the aspect of colour in twilight.

By means of blinking, which is considered by Louis Corinth one of the four cardinal factors in the painter's art, the amount of light entering the eye is diminished and the light diffracted and diffused by the palisade of lashes, thus suppressing fine details of colour, shape, depth, light and shade and bringing out the salient features of the object.

Errors of refraction have an effect similar to blinking, especially in the case of myopes. Myopic painters are often glad to be under-corrected, as hypermetropic ones are, to be over-corrected. Goethe was against wearing spectacles, as he preferred a general view of the essentials by suppression of details. Rosica opines that pictures by myopes lose and those by hypermetropes gain in sharpness with the distance, and those by presbyopes are best viewed from a distance.

Pollack's statistics at the Paris School of Arts showed that myopes preponderate in the number of pupils.

The uncorrected hypermetrope sees best the most highly refracted blue rays, and the uncorrected myope, the red rays of the spectrum. According to Patry, one should find the finest colourists among low myopes.

Astigmatism accounts to some extent for the disproportion in length and breadth seen in the pictures of some artists.

Uniocular vision has the same effect of diminishing relief and flattening views as binocular vision with half-shut eyes. Contracting the visual field, as by looking through the tube formed by the curled hand, throws into relief individual parts of the whole view.

There are some well-known painters among the relatively colour-blind. The pictures of elderly artists show a predilection to violet tones. This is attributed by some to the lens in the eye turning yellow with age, and by others to cerebral changes. That some people see everything brighter with the one eye than with the other is perhaps due to different degrees of pigmentation of the macula lutea in the two eyes.

The author invites ophthalmologists to examine the eyes of painters whenever opportunity occurs and publish their findings. With the increase of data on the points touched upon one would acquire a surer basis than at present for the correlation of certain peculiarities of vision with certain peculiarities of painting and thus be enabled to infer from the picture any peculiarity of vision the painter may have had and appraise his work the better for it.

D. V. GIRI.

(6) **Fischer, Elisabeth (Bâle).—The development of papill-oedema: anatomical contribution. (Anatomischer Beitrag zur Kenntniss der Genese der Stauungspapille).** *Zeitschr. f. Augenheilk.*, Vol. LXXII, p. 369, 1930.

(6) **Fischer** reports a case of a right-sided cerebello-pontine tumour in a man aged 61 years, in whom papilloedema had developed in the left eye, the right eye showing an old optic atrophy, probably primary in type. A detailed description of the post-mortem findings is given, and other cases in the literature in which papilloedema did not supervene on an atrophic nerve, are

recalled. The author finds support for Behr's view that the parenchyma of the optic nerve must be alive to be capable of swelling; in proliferated glial tissue no oedema can develop. Apparent swelling in an atrophied disc is due to proliferation and swelling of the lamina cribrosa, as is suggested by the case reported by Yamaguchi. Mild oedema may also supervene in the perivascular lymph-sheaths of the atrophic nerve. No support is found for Behr's view that reduplication of the dura at the optic foramen is concerned in the production of papilloedema. In the author's case the oedema in the living nerve could be traced back to the chiasma.

ARNOLD SORSBY.

(7) **Rumjanzewa, A. F. (Kiew).—Papilloedema and intra-ocular pressure. (Preliminary communication). (Stauungspapille und intraokular Druck).** *Zeitschr. f. Augenheilk.*, Vol. LXXII, 1930.

(7) The fact that the central canal of the optic nerve is one of the channels of drainage of intra-ocular fluid, led **Rumjanzewa** to investigate the ocular tension in cases of papilloedema. Such measurements were carried out in 24 out of 63 cases the author observed. In these 24 cases the tension was measured before and after cranial decompressive operations. In all, pre-operative ocular tension was low (10-18 mm. Schiötz, in the morning); after operation tension rose to 30-35 mm., going down to normal after some time. In one case, in which the papilloedema was due to orbital sarcoma, the tension in the eye was 35 mm., being 10 mm. higher than in the fellow eye. The inversion of ocular tension and intracranial tension, is held to be due to disturbances in cerebral circulation, the low ocular tension during increased intracranial pressure being secondary to cerebral and ocular anaemia, and the increased ocular tension after decompression being secondary to reactive hyperaemia. These factors in the production of intra-ocular fluids are more important than the disturbances in drainage *via* the optic nerve.

ARNOLD SORSBY.

(8) **Mets, Dr. A. de.—Un Siècle d'Ophtalmologie en Belgique.** 1830-1930. J. Vromans, Brussels, 1931.

(8) This is an extract from the jubilee edition of "Scalpal"—cent ans de Médecine en Belgique—and contains an historical review of ophthalmology in Belgium during a hundred years from 1830-1930.

A brief account of the lives and work of ophthalmic surgeons during this period is given, and two pages are devoted to photographs of twelve of the more distinguished of these.

There is also a description of the ophthalmic clinics and university professorial chairs in the capital and main provincial towns of Belgium, their founders, history, and the work they have done in the past and are doing to-day.

Warlomont, the founder of the International Congress of Ophthalmology, gave a great impetus to the investigation of diseases of the eye in Belgium during the last century. The injuries produced in war and by industrial accidents and also trachoma were the subjects of particular study.

At the end there is a programme of the papers read before the centenary congress.

H. B. STALLARD.

(9) **Whittington, T. H. (London).—A wider view of ophthalmology.** *King's College Hospital Gazette*, 1931.

(9) Under the above title an article by **Theodore H. Whittington**, reprinted from the *King's College Hospital Gazette*, 1931, has been sent to us. As a general rule Hospital Gazettes are not noted for such a philosophical paper as the present one. Many branches of science touch each other in ophthalmology; we associate with the radiologist, the astronomer, the physicist and the wireless expert, as well as with general medicine, surgery, neurology and psychology.

Whittington emphasises the fact that, in these days of rapid transport, a contracted visual field may be a greater danger, both to drivers and pedestrians, than poor form vision; further a good muscle balance is essential in judging distance and depth.

With regard to headaches in ophthalmology, he records some instructive cases. In one, neurasthenia, despondency and failing sight, which was not improved by fresh glasses, were found to be due to tobacco poisoning. As Whittington says: "a thoroughly vicious circle." Proper treatment not only restored the sight but banished all the other symptoms. Another case of a man, who had been advised by his doctor to see an oculist for glasses as a cure for headache, was found to be on the brink of uraemia, with marked papilloedema, immeasurably high blood pressure and urine loaded with albumin.

It does not need much perspicacity to realise that most of these signs should have been discovered by the medical man when he examined the patient before forming his diagnosis that glasses were needed. Team work is magnificent in theory, but we deprecate the refraction of the eye being made the peg on which to hang all the ills that flesh is heir to. It is true that this must be an exceptional case, but most of us must have seen at one time or another cases of renal disease which have been unsuspected until the eyes have been examined.

Whittington has analysed 1,000 consecutive private cases. These are divided into two categories. In the first, refraction cases numbered 657 of whom 316, complained of headache or pain; 319, of inability to see; 37, of "spots," watery eyes, blinking, etc.; 67 showed defects of muscle balance and 19 were "nervy." The second series comprised 343 non-refraction cases, of which 94 showed signs of inflammation of the eyeball; 53 were cases of injury; 48 had lenticular trouble (18 cataracts); 8 were cases of glaucoma; 33 were cases of squint; 29 had lid conditions and 7 were lacrymal cases.

"The complete ophthalmologist must be a practitioner of medicine, a surgeon, a neurologist, a physiologist, a mathematician, a physicist, and above all, a psychologist."

This all points to the necessity of a wider view of ophthalmology and a less narrow training for the future ophthalmic surgeon than that which has been considered sufficient in the past.

R. R. J.

## BOOK NOTICES

**Iris Pattern in the Vertebrates.** By IDA MANN (London). *Trans. Zool. Soc.* Pt. 4. Pp. 355-404. 1931.

This monograph, which forms a valuable contribution to comparative anatomy, can hardly pass unnoticed by ophthalmologists since, although its interest is mainly zoological, it cannot fail to be of service as a work of reference in a branch of comparative ophthalmology up to the present practically untouched. The subject is that of the ***intra vitam*** appearance of the iris in vertebrates, and the list of species examined (139) includes animals chosen both from the point of view of systematic, and of adaptive characteristics. Several rare species, not hitherto investigated in this country, were also included as opportunity arose. The paper, which is extremely well produced, contains, besides exhaustive tables of classification and text figures, over fifty of the author's coloured drawings of slit-lamp appearances of the iris in a great variety of fish, reptiles, birds and mammals. From this point of view the paper is an interesting example of the interaction of allied sciences, since the introduction of an instrument of clinical precision has rendered possible a fresh approach to certain biological problems. The main thesis of the paper is an attempt to separate fundamental morphological characters depending on deep-seated embryological processes, from secondary adaptive or individual variations. In the first place it

was necessary to prove or disprove the hypothesis that the condition of the embryonic ocular circulation helped to determine the definitive iris pattern. Secondly, having shown this contention to be in the major part tenable, the author considers the question of the constancy of vascular arrangement for each order. Thirdly arises the problem of the correlation of variations with function or habitat. The second proposition was found to be of less wide applicability than the first, while the third was found to be definitely complicated by unknown factors, especially where pigmentation was concerned. Whatever may be the opinion of zoologists on much that is controversial in the paper, it is of undoubted value as a record of a series of first hand observations in what is practically an untouched field. Many of the descriptions, as for example, that of the specialization of the gecko pupil for diurnal vision, are entirely new.

Miss Mann is greatly to be congratulated upon a laborious, but fascinating piece of research, admirably carried out, and thanks are due to the Zoological Society for publishing what must have been a costly communication.

**Seventeenth Annual Report for the Ophthalmic Section, 1929. Department of Public Health, Cairo.** Government Press. Price, 2s.

The number of ophthalmic hospitals, including travelling hospitals and ophthalmic departments of general hospitals is now 45. The largest hospital is that which has just been opened at Rod-el-Farag, a suburb of Cairo, which has 100 beds. Nearly half a million new patients were treated during the year, with more than four million out-patient attendances. Nearly two hundred thousand operations were performed. The annual cost of maintenance was £85,000. The work is carried on by 105 ophthalmic surgeons. This is the largest ophthalmic organization in the world, and Egypt may well be proud of this achievement.

The percentage of blindness in one or both eyes has been gradually falling since 1909, when it was 15 per cent. It is now 8 per cent. This shows that the ophthalmic hospitals and their propaganda are exercising enormous influence in the country. The incidence of primary glaucoma exceeds that of any other country, more than 1 per cent. of all new patients showing definite signs of this condition, and calling for a decompression operation in 5,000 cases.

Great importance is attached to the post-graduate courses in ophthalmology which are held twice a year, and were attended by 35 medical men in 1929.

Perhaps the most important work carried out is that in the Government Primary Schools, at 32 of which there are ophthalmic

clinics. At each of these during the school terms, an ophthalmic surgeon attends on five days a week to carry out treatment for trachoma and acute conjunctivitis. On the date of the final inspection, 835 pupils were wearing glasses, which had been prescribed after retinoscopy under cycloplegia.

The pathological work on behalf of all the ophthalmic hospitals is carried out at the Giza Memorial Ophthalmic Laboratory under the supervision of Dr. Rowland Wilson. 692 microscopical examinations were made, and 1,036 Wassermann tests performed. Special culture tests for diphtheria of the conjunctiva were made, of which 8 were positive. The number of malignant tumours detected was very large. They include those affecting the eyelids, 43; the limbus, 32; the choroid, 1; the retina, 10; and the orbit, 4.

Important experimental work on the aetiology of trachoma was carried out by Dr. Rowland Wilson and his assistants which forms the subject of a separate report.

**Department of Health, Palestine. Annual Report, 1930.** Jerusalem: Printing Office, Russian Buildings. Price, 2s.

The annual report for 1930 of the Director of Health, Palestine, Colonel G. W. Heron, C.B.E., contains a very interesting and well-written account of the activities of his department of the Government. Palestine is a small country, roughly about 125 miles long and 35 miles broad, containing less than a million inhabitants. There are four times as many Moslems as Jews and twice as many Jews as Christians.

In Jerusalem there are eight hospitals which cater for ophthalmic patients, of which the most important is the Ophthalmic Hospital of the Order of St. John, of which Dr. Strathearn, C.B.E., is the Warden. Here about 20,000 patients a year are treated. The Jewish Hadassah Hospital and the Church Mission to Jews Hospital each treat rather less than 4,000 patients a year, while each of the other hospitals, of which the French St. Louis Hospital is the largest, has a smaller clinic.

Government ophthalmic clinics are maintained at Ramleh, Gaza, Acre, Beersheba, Nablus, and Tulkarem. French hospitals carry on ophthalmic clinics at Bethlehem, Jaffa, Haifa, and Nazareth. Jewish ophthalmic clinics are maintained at Jaffa, Haifa, and Tiberias.

It is to be noted that at Ramleh school 99 per cent. of all the boys showed evidence of active or of cured trachoma.

The number of patients attending the out-patient clinic becomes enormously increased in August, September and October, as the result of the incidence of acute conjunctivitis in epidemic form. Very similar conditions obtain in Egypt during the hot weather.

**An Index of Prognosis and End-Results of Treatment.** Edited by A. RENDLE SHORT, M.D., B.Sc.(Lond.), F.R.C.S.(Eng.). Fourth Edition, Royal 8vo, pp. xi + 599. Bristol: John Wright & Sons, Limited. London: Simpkin, Marshall, Limited. 1932. Price, 42s.

Nine years have elapsed since the third edition of this book appeared. The last edition was noticed in our columns (Vol. VII, p. 203) where the general scope of the work was outlined. It forms one section of Wright's *Index Series in Medicine and Surgery*, and can be confidently recommended to the busy general practitioner for whose benefit it has been written.

It is not surprising that many of the articles have had to be amplified or rewritten to bring them up-to-date. The ophthalmic section is in the hands of Mr. Arthur D. Griffith, and comprises, as in the former edition, short articles on cataract, glaucoma, interstitial keratitis and myopia. These articles are well-balanced and cover the ground fairly; they are based on sound principles of ophthalmology, and are amply sufficient for the general practitioner. The family doctor is not expected to be *au fait* with the latest views on ophthalmic physiology and biochemistry, or with the newest methods of treatment of retinal detachment by Gonin's method; whereas he may reasonably be expected to be able to help in setting the minds of his nervous patients, whose general health he is concerned with, at rest over the matter of a few peripheral striae which may have recently made their appearance in the lens.

**Medical Social Service in Eye Clinics.** Transactions of the first of a series of study meetings arranged by the Committee on Development of Social Service in Eye Clinics of the Medical Social Service Section of the Welfare Council of New York City.

During the years 1930 and 1931, a series of meetings was arranged by the Committee on Development of Social Service in the Eye Clinics of New York, and at these certain ophthalmic surgeons were invited to read papers and open discussions on various diseases of the eye and their social implications.

The transactions consist of a report of these meetings and the discussions that followed. A simple and brief description of the pathology, diagnosis, and treatment of certain diseases of the eye is given in terms that social workers and laymen are able to understand and appreciate, and in each instance this is followed by suggestions as to the care of patients, investigations into their environment, after-care and "follow-up." Special attention is paid to the advice that a social worker should give to a patient and his family regarding the nature of his disease, its treatment and prognosis.

Cataract; trachoma; glaucoma; diseases of the cornea; diabetes; strabismus; nephritis; detachment of the retina; diseases of the optic nerve; uveitis; arteriosclerosis and progressive myopia are amongst the subjects discussed at these meetings.

These transactions will be of interest to the social service departments of ophthalmic hospitals and also to ophthalmic surgeons who are interested in this aspect of their clinic work.

**Ofthalmologicky Sbornik.** Collection of Papers read before the Sixth Congress of the Czechoslovak Ophthalmological Society, 1931. Published by the Society, Prague.

The Transactions of this Society, now in its sixth year, afford evidence of the scientific activity of its members. The present volume includes 37 communications, and appears to contain much material of value and interest, though concealed in a language known to few outside Czechoslovakia. It is true that some indication of the contents of each paper is given in a *résumé* in English, French or German, but usually this is too brief to be of much service. The reviewer notes a great deal in the original, the translation of which into any one of the three foreign tongues, would be welcome.

Among the communications which arouse interest are several dealing with secondary glaucoma of varying causation, luxation and sub-luxation of the crystalline lens, hereditary familial *ectopia lentis*, etc. A valuable contribution concerns the treatment of *ulcus serpens corneae* with ultra-violet rays; the conclusion of the author, Dr. J. Derer, is—"In slight and moderately severe cases, this treatment held its place well with the usual methods; in very severe and advanced ulcers, no better result was obtained than with the usual treatment."

A number of the papers are furnished with useful bibliographies. The volume is well printed; it is lacking in illustrations; it is worthy of something more lasting than a paper cover.

**Fifth Annual Report of the Giza Memorial Ophthalmic Laboratory, Cairo.** Cairo: Schindler's Press. 1930.

The Director of the Giza Memorial Ophthalmic Laboratory, Dr. Rowland Wilson, has produced an interesting, well-written and well-printed report for the year 1930.

The laboratory being adjacent to the Giza Ophthalmic Hospital is well situated for the post-graduate lectures on ophthalmology which are given in two sessions each year, after each of which examinations are held for admission of young ophthalmologists to the Government Ophthalmic Service.

Pathological specimens are received from all the ophthalmic hospitals and from a number of private oculists. Among 81 blind staphylomatous eyes with secondary glaucoma which were sent up

one was found to contain a retinal glioma and another a melanotic sarcoma of the choroid. Seventy other specimens of malignant tumour were dealt with; these affected the eyelids 42 cases, the conjunctiva 3 cases, the limbus 12 cases, the cornea 1 case, the choroid 3 cases, the retina 6 cases, the orbit 2 cases, and the lacrymal gland 1 case. The pathological material available for study is extremely rich.

The results of the experimental investigation of the aetiology of trachoma are summarized as follows:—

(1) Pure cultures of bacterium granulosis have utterly failed to produce "chronic granular conjunctivitis" in monkeys (13 in all).

(2) Inoculations into monkeys with infected monkey tissue or secretions thereof never fail to give positive results even in monkeys refractory to pure cultures.

(3) Bacterium granulosis is capable of inducing in the human conjunctiva an acute conjunctivitis of short duration. The inflammation is accompanied by mild granular lesions which, however, disappear without treatment leaving no permanent sequelae.

(4) Tissue transfers from monkey to the human conjunctiva have so far failed to produce granular lesions.

(5) Bacterium granulosis has never yet been recovered from Egyptian trachoma.

In the Fourth Annual Report of the Laboratory full details were published of an ophthalmic survey of a village, Bahtim. This investigation has been continued. Thirty-seven infants were born during the months September to December who have been examined frequently since birth. Of these, two died at the age of six months and in both cases the presence of tiny follicles on the tarsal conjunctiva was suspected. The remainder, with one exception, developed definite trachoma before they were a year old. Of the 34 cases which developed trachoma, in 22 the appearance of the first definite signs of trachoma was preceded by an acute mucopurulent conjunctivitis mostly of Koch-Weeks bacillus origin. In the remaining 12, there was a previous chronic catarrhal conjunctivitis, in seven of which the Koch-Weeks bacillus could be found. In the one case out of the 37 which has not as yet developed trachoma, *i.e.*, after 18 months, there has been a mild chronic catarrhal conjunctivitis but no pathogenic bacteria have been found in direct smears.

There is no rigid seasonal incidence of trachoma for it may develop at any time of the year. Some of the cases developed the disease during the winter without any preceding attack of acute inflammation. Koch-Weeks or other bacillary infection of the conjunctiva is not therefore a necessary prelude to infection with trachoma.

During a period of the year under review a bench at the laboratory

was placed at the disposal of an American pathologist for research work on trachoma. The admirable facilities which this well equipped laboratory affords, and the abundant clinical material which is available, make it the object of a necessary pilgrimage for any pathologist who wishes to carry out a research in the aetiology of trachoma, and who has the requisite credentials as to experience in experimental work.

## CORRESPONDENCE

*To the Editors of* THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—In the December 1931 number of the Journal, on page 723, an abstract is given of Hughes's method of treating spastic entropion, taken from the *American Journal of Ophthalmology*.

The treatment of this condition by novocaine and absolute alcohol, was introduced into the Ophthalmic Department of the Royal Hospital, Baghdad, in September, 1930, and since then, 11 cases have been treated by this method. In all cases except one, the treatment has met with complete success, and in this one case, the entropion was turned into a slight ectropion. In no case was it necessary to repeat the treatment. Our procedure differs slightly from that described. Novocaine 2 per cent. is used, and may be injected in quantity up to 1·0 c.c. The needle is inserted at the outer canthus of the lid, and pushed through the lid to the inner canthus. The injection is then made, the needle being gradually withdrawn during the injection. Absolute alcohol is then injected in a similar manner, 0·5 to 1·0 c.c. being used. Hot fomentations are then applied to the eye four hourly.

Yours truly,

GORDON SPENCER.

ROYAL HOSPITAL,
BAGHDAD (IRAK).
*January 6, 1932.*

*To the Editors of* THE BRITISH JOURNAL OF OPHTHALMOLOGY.

SIRS,—In the review of Mr. Ernest Clarke's book "The Fundus of the Human Eye" in the February number, page 122, your reviewer has fallen into error in attributing to me the selection of the drawings and the writing of the descriptive legends. Mr. Clarke was good enough to ask me to look through the drawings and legends, which I did, but the work is Mr. Ernest Clarke's and not mine.

Yours faithfully,

A. H. LEVY.

# OBITUARY

## GEORGE STRONG DERBY, of Boston, Mass.

THE death of Dr. George S. Derby was noted in our last number. He quickly succumbed to an attack of pneumonia at the end of last year. He was born in May, 1875, the son of Dr. Hasket Derby, who was a pioneer of ophthalmology in the United States.

A memoir by Dr. Harvey Cushing contributed to the *New England Journal of Medicine* (Vol. CCV., pp. 1262-1264), 1931, gives interesting details of G. S. Derby's ancestry. It appears that Roger Derby emigrated from Devonshire in 1671 to America, and settled at Ipswich. After the death of his first wife he moved to Salem and married Elizabeth Hasket. Their male descendants became famous shipowners, merchants and mariners and were largely instrumental in making Salem the leading American port.

After receiving his preliminary education, the younger Derby entered Harvard and took his B.A. in 1896. At this time he was prominent as an oarsman. He then entered the Harvard Medical School and was resident interne in the Massachusetts General Hospital. This was followed by a foreign tour, during which he worked in Vienna and at Moorfields, visiting also Berlin, France and Holland.

On his return to Boston in 1901 he set up in practice in his native city, where he held many appointments. He was much respected both in the United States and in this country, where he had many friends. Dr. Derby held the Williams Chair of Ophthalmology at Harvard and had been president of the Suffolk District Medical Society, and chairman of the ophthalmological section of the American Medical Association. He also served on the staff of the Massachusetts Eye and Ear Infirmary and Commission for the Blind.

He saw active service in 1917-1918, when he was attached to Base Hospital No. 5, with which he sailed for France. Shortly after arrival he worked in various casualty clearing stations and was promoted Major in 1918. He was later transferred to the Headquarters Staff of Consultants to the American Expeditionary Force as an ophthalmic surgeon, and became Lieut.-Colonel in October, 1918. He returned home in January, 1919. He was specially cited in despatches by General Pershing. Dr. Derby married in 1901 and leaves a widow and two children to mourn his loss. His mother also is still alive. The heartfelt sympathy of British ophthalmology will go out to them in their bereavement.

Sir William Lister writes:

George Derby became known to English ophthalmic surgeons in the early years of 1900, when he worked at Moorfields, but it

was during the War—when he came to France in the Harvard Unit—that by his strong personality, his power as a worker, his selflessness, and his charm as a companion, he became widely known and loved.

When the American Army came to France he was appointed Consulting Ophthalmic Surgeon to the Army in conjunction with Dr. Greenwood, and did brilliant work both as an organiser and as a clinician. Before this he worked as Ophthalmic Specialist for the British Army, both in the Harvard Unit and also at the English Ophthalmic Centre at Boulogne, rendering very valuable service. There was never a task so trivial but he did it with alacrity, nor was there a problem so difficult but he would whole heartedly discuss it and throw new light on it. All who worked with him were aware of his high ideal of service, and though he was extremely reticent, those who knew him well appreciated that this was based on deep religious conviction.

In later years at the English Speaking Ophthalmic Convention in London, and at the International Ophthalmological Congress in Holland, he, with his genial cheery face and great broad shoulders, was constantly a centre to which many were drawn by his personal magnetism.

He was a man of sterling uprightness and of great sympathy. His judgments both of people and in his professional work were wise and kindly, enlivened by a happy sense of humour, and it was almost unknown for him to make a disparaging criticism of anyone.

The loss of George Derby will be deeply felt, both in his own country and in England, by a large circle of acquaintances, while to his many friends his death leaves a blank which it is impossible to fill.

## NOTES

**Death**

WE announce with regret the sudden death on November 29, 1931, of Professor Roselli, of Rome, who was the Italian representative on the International Council of Ophthalmology.

We are indebted to Professor Ovio, through the courtesy of Dr. Marx, for giving us this information and for the facts which follow:—

Romeo Roselli was a scion of a well-known Roman family and was born in 1866. His interests were mainly centred in the scientific side of ophthalmology, and he was the author of many

important contributions to this subject. This does not mean that he was a weak clinician: the reverse was the case; his clinic was highly organized, he made himself master of all recent developments in technique and his hospital clinic was one of the chief attractions to ophthalmic visitors to Italy. His loss will be much felt by his friends and in him the ophthalmic fraternity lose a kindly personality and the poor an efficient hospital surgeon.

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**Ophthalmological Society of Egypt**

THE Annual Meeting of the Ophthalmological Society of Egypt will take place at the Memorial Ophthalmic Laboratory, Giza Ophthalmic Hospital, on March 25, 1932.

* * * *

**French Course in Ophthalmology**

THE summer *cours de perfectionnement* which is given by Professor Terrien and collaborators has been arranged to be held at the Hôtel Dieu from April 29 to May 27, 1932.

The course comprises lectures, demonstrations, laboratory and operative work and electrotherapy.

Further information may be obtained from Professor Terrien.

* * * *

**Leading the Blind**

WE are indebted to Dr. Pines for the following extract from Joseph Delmont's book "Catching Wild Beasts Alive." (Hutchinson & Co., London, 1931).

"A STRANGE FRIENDSHIP."

"On the southern slopes of Kilimanjaro I caught a kudu to whose stumpy tail a dwarf gnu bull was hanging by his teeth. When the lasso coiled itself round the kudu's neck, the animal struggled wildly, and the gnu let go of its tail, ran about as though lost, and slipped down the bank of a stream. When at last I caught it, I found that it was blind and had a huge scar running across the eye-sockets. It was impossible to discover how this scar, which must once have been a terrible wound, had been inflicted. I assume that it had been caused by the claws of a lion. It is probable that in springing the animal had slipped, and in the fall the claws had torn open the gnu's face and destroyed both the eyes.

The moment the kudu noticed that his friend was at hand, he quietened down, ran up to the other animal, and pushed his hind-quarters towards him. The blind gnu sniffed, bleated once or twice,

ran his mouth along his guide's back, and then took hold of the stiffly outstretched tail.

How this friendship had been formed remained a puzzle. Both were of the same sex, and yet so fundamentally different. I stood still before the two quivering animals, seeking to realize this wonderful phenomenon. I stroked my hand along the kudu's back; and all the time he turned his head towards the blind gnu. The end of the kudu's tail was quite stripped of hair, mangled and thin; it had been eaten away by the gnu's teeth. Who knows how many years this animal had been leading his blind friend about? And it is a marvel that when galloping the gnu had never lost his guide and been eaten by a lion or leopard."

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**Société française d'ophtalmologie**

THE French Ophthalmological Society will celebrate this year the 50th anniversary of its foundation. In view of this special occasion the annual congress will be held in July, from the 18th to the 21st. There will be receptions and a banquet organized. For all particulars please apply to the general secretary, Dr. René Onfray, 6, avenue de la Motte Picquet, Paris VII.

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**Corrigendum**

BY an oversight the review of Dr. Sjögren's work on juvenile amaurotic idiocy on page 110 of our last number was attributed to Mr. MacCallan. It should have been entered under Mr. C. H. Usher's name. We offer apologies for our mistake.

## FUTURE ARRANGEMENTS

### 1932

*March* 4.—North of England Ophthalmological Society, at Liverpool.

*March* 11.—Section of Ophthalmology, Royal Society of Medicine. (Clinical Meeting).

*April* 1.—Midland Ophthalmological Society, at Birmingham Eye Hospital.

*April* 8.—North of England Ophthalmological Society, at Sheffield.

*May* 12-14.—Annual Congress of the Ophthalmological Society of the United Kingdom, at Edinburgh.

*June* 7.—Midland Ophthalmological Society, at Gloucester Royal Infirmary.

*June* 10.—Section of Ophthalmology, Royal Society of Medicine. (Annual Meeting).

*October* 4.—Midland Ophthalmological Society, at Birmingham Eye Hospital.

## CONTEMPORARY OPHTHALMIC LITERATURE

### American Journal of Ophthalmology. *January, 1932.*

ROSENOW and NICKEL. Elective localization in determining the etiology of chronic uveitis.
BROWN. Considerations underlying the experimental production of uveitis.
O'LEARY. A study of syphilis in the etiology of uveitis.
MACKENTY. Infections of the upper respiratory tract in the etiology of uveitis.
CASTROVIEJO. New diagram for testing binocular diplopia.
MAYER. Epinephrin in progressive myopia.
HARDY. Progress in medical and surgical treatment in ophthalmology.

### Annales d'Oculistique. *December, 1931.*

JEANDELIZE and BAUDOT. Concerning surgical treatment of detachment of the retina.
TREIGNY. Reflections concerning the use of high frequency in ophthalmology.
MARX. Professor K. K. K. Lundsgaard (1867-1931).

### Archives d'Ophtalmologie. *January, 1932.*

CANGE. Ocular manifestations of plague.
COPPEZ. On a new case of congenital absence of lateral movements in the eye.
WEEKERS. Experimental ophthalmic reactions from puncture of the ciliary body.
MARQUEZ. The necessity for a rational classification of the causes of blindness.
PUSCARIU. Observations on some rare cases of ocular syphilis.

### Archives of Ophthalmology. *December, 1931.*

PETER. Dystrophy of the corneal endothelium: Its recognition and clinical significance.
EVANS. Retinal perivascular delineation.
SAMUELS. Post-operative non-expulsive subchoroidal haemorrhage.
MAGITOT. Tonoscopy.
O'BRIEN and SALIT. Iso-electric point of lens protein.
FERREE, RAND and SLOAN. Roenne's nasal step as studied with stimuli of different visibilities.
ADLER. The metabolism of the retina; further notes.
PRANGEN. Subnormal accommodation.
FRIEDMAN. Subconjunctival haemorrhage in intra-ocular foreign bodies.

## Klinische Monatsblätter für Augenheilkunde. *January, 1932.*

BÜCKLERS. Bilateral horse-shoe shaped corneal opacity in morbus caeruleus.
FLEISCHER. Stereoscopic photography of the haemosiderin ring in keratoconus.
——— Molluscum contagiosum of the lids in an unusual form.
BUSACCA. Anatomical and clinical observations on Koeppe's efflorescenses of the pupil margin in irido-cyclitis.
SCHEERER. Sympathetic ophthalmitis or luetic iritis?
HARTUNG. A familial angioid appearance of pigment streaks in the fundus.
BRAUN. A new hemikinesimeter.
RIEHM. Experiments on the problem of endophthalmitis phaco-anaphylactica.
APIN. On the basis and method of clinical estimation of tension.
G. ERLANGER and A. ERLANGER. Localised dilatation of the pupil from ionto-phoresis with adrenalin.
PETROVIC and TSCHEMOLOSSOW. Can one demonstrate a connection between Gunn's phenomenon and the hypophysis?
POCHISSOFF. Modification of the conjunctival bridge extraction particularly for eyes with raised tension.

## Archivio di Ottalmologia. *November, 1931.*

ROSSI. The action of certain derivatives of choline on the eye in normal and pathological conditions.
MARIOTTI. Contribution to the study of internal ulcer of the cornea.

## Bollettino d'Oculistica. *December, 1931.*

ESPILDORA. Cephalic arterial hypertension.
KOCH. Researches on spontaneous tetrophthalmus in amphibia.
TROVATI. Endopituitrin in the cure of simple chronic glaucoma.
BARLETTA. On a singular ophthalmoscopic appearance in an hereditary syphilitic.

## Lettura Oftalmologica. *November, 1931.*

MONTANELLI. On the action of Fenelo by subconjunctival injection. (Clinical and histological research.)
MORETTI. On the "oncolitic" power of the tissues and the ocular humours.
LA FERLA. Circumscribed degeneration of the cornea simulating a new growth.

### *January, 1932.*

ZAULI. The flora of the conjunctiva, before and after removal of the lacrimal sac.
PETRI. Note on gonotoxic dacryo-adenitis.
BAQUIS. Ocular complications of psittacosis.

## Revista de Ophtalmologia. *November, 1931.*

STEVENSON. Glaucoma and its treatment.
FALCAO. "Subsidio retinographico ao estudo," etc.
FONSECA. Hysterical blindness.

## Revista Oto-Neuro-Oftalmologica y de Cirugia Neurologica. *February, 1932.*

PAVIA and DUSSELDORP. A case of incipient "enfermedad de Lagleyze" von Hippel.
MAGITOT. Tonoscopy and intracranial hypertension.
BRAUN. A new hemikinesimeter.